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Minnesota

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GENERAL

INFORMATION

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Most adults fail to realize that their impatience with a thorny child often reflects their own childhood patterns. American parents need to spend more time with their offspring. Family physicians can often help "thorny" family situations.

The Thorny Youngster

HYMAN S. LIPPMAN, M.D.

Saint Paul, Minnesota

Presented in the Symposium on Mental Health, Minnesota State Medical Association, Minneapolis, May 24, 1958.

A THORNY youngster is a troubled youngster. His irritating behavior is his way of letting others know he is in a state of tension. He usually knows that his behavior disturbs others, because most people react to him with hostility. And yet his behavior does not change. The way he behaves is the only way he can behave and the way he will continue to behave—unless something is done to lessen his unrest.

If his thorny behavior is longstanding, he is suffering from character or personality disturbance which is difficult to change, but he can respond when his needs are met—when he will no longer have cause to fight back. It is unlikely that any child or adult wants to be hateful, without a good reason. Life is much pleasanter when someone smiles at us, is glad to see us and be with us. We are pleasant and able to give of ourselves, when we are relaxed and comfortable and feel loved. This is rarely if ever true of the thorny youngster.

By thorny behavior I mean that which irritates, annoys or angers. This includes many kinds of behavior such as defiance, teasing, cruelty, disrespect, obscenity and physical attacking, to men-

tion only a few. Whenever people react strongly to disturbing behavior in a youngster, one must suspect that they have been made deeply anxious by the behavior.

Most people are annoyed and angered by several kinds of thorny behavior in youngsters. Few of us are free from a reaction of anger when a youngster swears at us, attempts to belittle us, or is openly belligerent and attacking. We sense the hostility in his behavior and reflexly fight back. We can control this impulse if we recognize that the youngster is psychotic, feeble-minded, or in a state of acute panic. Those who are trained to work with hostile youngsters are more successful in holding back their own hostile feelings, but generally speaking, most people subjected to hostile, baiting youngsters, react with resentment and hostility. This is understandable when we take into account the fact that we all have considerable amounts of hostile aggression as a part of our inheritance, and have had to repress this hostility into our unconscious early in life in order to continue to be accepted and loved by our parents. Since these hostile drives are powerful, we did

not give them up without a real struggle. The struggle to hold back this hostility is so great for some individuals that throughout their lives they are unable to express aggression or hostility even when it is called for. They suffer because of this.

The fact that most of us are able to repress our impulses of hate and destruction does not mean that these urges no longer exist. They continue to exist in our unconscious mind, retaining their power to become activated in all their fury when conditions are ripe for this. The essential fact is that since we have made such an effort to control our hostile urges we expect others to do the same, and so when we come in contact with youngsters who are hostile and hateful we react with bitterness and resentment to them.

We see this strikingly in our attitude toward the criminal. Our first reaction on learning of his criminal behavior is to see to it that he is punished, and only later are we able to accept the fact that he needs to be understood and treated. Those who are most insistent that the criminal be punished usually have had the greatest struggle to control their own early aggression. In attacking the hostile aggression of the criminal they are indicating that they are still condemning their early destructive wishes. They are constantly on the lookout lest these wishes find an outlet in their behavior, and they are threatened by this danger. Our reaction, then, to the hostile youngster is based on below-the-surface factors, as well as on surface annoyances.

Certain kinds of behavior, though unpleasant to most people, are particularly disturbing to a limited number of people. This is a result of their early specific life experiences that have made them unable to tolerate these particular kinds of behavior. A father who, in his early life, was afraid of any physical aggression is quite likely to be very upset if his son refuses to fight when attacked by a youngster who is smaller but more aggressive. This situation calls to his attention his own early inadequacy, and his feeling of shame for having been so afraid to fight when he was a boy. Even worse, it depresses him to realize that his child will have to experience the same humiliations to which he had been subjected. Such a father will do anything to spare his son this grief.

Few fathers can tolerate feminine behavior in their boys. They know how most people react to an effeminate boy, how they ridicule him and imitate his effeminate movements. Effeminate be-

havior in boys is rejected by both sexes, since it is abnormal behavior and therefore threatening. It is not surprising that a father whose manners and interests have a strong feminine coloring which he may not recognize, will be *especially* concerned by effeminate behavior in his son. A child quickly senses this anxiety in his father and responds to it by becoming increasingly insecure.

Controlling parents find defiant behavior in their children very annoying. Such parents are usually unaware that they themselves are controlling, and often use undue pressures to hold back relatively normal aggression and demands in their children. It is interesting to note how seldom controlling parents are aware of the subtle pressures they use to control others. We see frequent results of unreasonable control by parents in the sudden outbursts of violence in youngsters who come to the Clinic for study.

Parents, whose dependency needs have not been sufficiently satisfied, and who later refuse to countenance any tendency in themselves to be dependent on others, overreact to behavior in their child that indicates dependency and passivity. Such parents early may forcefully demand that their children be independent and make their own decisions. In doing so, they deny the child the opportunity early, of being dependent on those he loves. This basic need is important for a feeling of security.

Many parents who are sensitive and emotionally labile, are disturbed when their child shows that he, too, is overly sensitive. When their child cries easily, is unable to tolerate denial, is shy, and timid, blinks his eyes, makes throat noises, or is passive, these parents are uncomfortable and are likely to exert undue pressure in an effort to stop the behavior that makes them anxious.

Not all behavior which is annoying and irritating to adults needs to be explained by similar behavior in the adult's own life which had to be rejected and repressed. Many adults, and perhaps most, have been brought up to feel that acting out, mean, dishonest, selfish behavior is bad behavior. They have grown up accepting the standards of their parents or teachers or others with whom they are identified, and react with annoyance or anger or impatience when they are subjected to these indignities.

Adults rightly expect youngsters to be willing to give as well as receive, to be fair in games and make an effort to be helpful. They are justified in being displeased with the violation of codes of

decency, but must also keep in mind that there are reasons for unpleasant behavior.

Unfortunately, knowing that there are reasons for the irritating behavior does not in itself modify the behavior. Something more must be done to effect a change.

I stated earlier that when thorny behavior is longstanding it is often due to character disturbance. More often, however, youngsters manifest behavior that is irritating to their parents and others, but which is not imbedded as character traits, and which may respond to simple measures. An opportunity for the parents to sit down and talk over the behavior with the child, may reveal what is making him uncomfortable and/or unhappy. The parents' talking together about their child may help to locate factors in the home that justify the youngster's protests. When parents believe that the demands of their children are unreasonable, they use their own means of discipline. They may make mistakes in the forms of discipline or punishment they use, but so long as they have deep affection for their child, and he is comparatively secure, the harm they do can be easily undone. Parents would do well to take time from their busy schedules to learn more about their children. They may have to spend much more time with them later on for not having been closer to them. The better they know their youngsters, the more intelligent will they be in dealing with them.

For the youngsters of longstanding annoying behavior, more will be required. I am sure that many parents ask physicians for advice as these problems arise in their families, especially if the doctor has cared for their health problems for many years and knows the family intimately.

It is well to look for the possible sources of irritation to the youngster. What are the parents like? How do they feel about this child? Is there favoritism in the family for another child? What kind of discipline do they use? Do the parents quarrel a great deal? Do they drink excessively? Are they too demanding, too rigid, too indulgent?

What opportunities does the youngster have to do well in anything that is socially acceptable? How does he achieve in his school work? What does the school report about his attitude and motivation? Does he have any religious affiliations? What character-building groups does he belong to? Does he belong to an *anti-social* group?

The answers to these questions may supply in-

formation that will help lessen tensions. You may gather this information yourselves or have it gathered by the visiting teacher or social worker in a family service agency. If the problem is serious enough to require your time, it is serious enough to require their's. Many of these problems respond to treatment efforts.

Interviews you may have with the youngster will help to locate tensions within him that disturb him. Such interviews cannot be hurried. The youngster must feel from the outset that the adult accepts him consistently, regardless of his statements or behavior. Only through a trusting relationship with the adult will the youngster be willing to talk about his personal problems and reveal his true feelings. When he is sure he will not be ridiculed, he will chance telling about his gnawing hatred of his parents and other authority figures in his life. He may also learn that alongside this hostility there is a good deal of affection for his parents. The way he feels about his experiences is more meaningful than reports others have made, because his feelings determine his behavior.

Removal of external pressures and the opportunity to talk out feelings may be all that is needed to modify disturbing behavior. When, in the process of relating to the adult, the youngster takes over the adult's attitude and social standards, treatment is facilitated and a better result can be anticipated.

Many youngsters are unable to trust a warm understanding adult; they have been disillusioned and doublecrossed by adults. They may test the adult repeatedly before being willing to trust him. Some youngsters who are excessively hostile may have a need to project their hostile feelings onto the adult. This makes the adult a hateful person, and justifies the youngster's hate and distrust. Such youngsters require long-time therapy from therapists especially trained to deal with pathologic behavior. Intensive study and treatment in a child guidance clinic or in a residential treatment center may be required.

Most of you will lack the time required to help youngsters who have some of the kinds of character problems mentioned. Some of you may have special talent in winning the confidence of disturbed youngsters. The realization that their whole future emotional adjustment to life might be affected by your help may motivate you to make a contribution in this direction.

The Querulous Primigravida

Are you being plagued with multiple questions from the young expectant mothers? Here is a concise and refreshing article which will help you to approach this problem with equanimity.

OWEN F. ROBBINS, M.D.
Minneapolis, Minnesota

THE WORD *querulous* has an additional meaning for this author—"hopeless." Hopelessly finding fault—hopelessly, habitually complaining—hopelessly fretful and fearful. Certainly anyone in obstetrics sees this patient—usually a young girl away from the protection of her previous home life, attempting with her equally young husband to make a new home for themselves.

Suddenly an event happens. She misses a period, her breasts become sore, her digestive processes are upset, she thinks she is going to have a baby.

Her first impulse is that she is happy and she tells her husband and he is happy. Then she talks to her friends, usually women who have had babies themselves.

It is tragically true that women have a sadistic

Presented in the Symposium on Mental Health, Minnesota State Medical Association, Minneapolis, May 24, 1958.

Querulous: Apt to find fault; habitually complaining. Expressing complaint; fretful; peevish.

compulsion in this regard. There is nothing the "old campaigner" pregnancy-wise loves to do more than to give a young girl, pregnant for the first time, some "good sound advise." She describes her own past pregnancies and labors in gruesome details, with herself as the central brave heroic figure.

Following these harrowing experiences she finally goes to the doctor. By this time she is *really querulous* and furthermore she is distressed physically, she is nauseated and vomits.

The doctor takes her history with a kindly tolerance, the technician takes blood out of her arm with a cheerful smile and the doctor does the physical and everything is fine. She is given her vitamin pills and calcium and told what to eat and what not to eat and what to do and what not to do. She is told to come back in four weeks and she is launched on her career of motherhood, but she is still querulous!!

In the months and weeks that follow, she visits

the doctor regularly for her prenatal visits. She will sit for hours on end waiting for her little friendly pat and advice. Obstetricians notoriously keep patients waiting. The very nature of their practice decrees this. It is not his fault, but to the patient there is an element of frustration after waiting an hour or so and then having the visit over within two or three minutes, the doctor being too busy to answer any questions and she not being able to remember her questions that she planned to ask, anyway, because of the great rush into the examining room to be weighed and gotten ready for the doctor.

One of the greatest "time-savers" as far as the doctor is concerned is to startle the patient with something, so that all thought of questions and conversation leaves her mind in thinking about that startling something. The doctor can then make a quick exit leaving the patient to ponder over this situation. One of the most startling situations that happens during pregnancy is the weight-gain. Anybody who is gaining three to five pounds and more every month is a little upset by it.

There are "old doctors' tales" just as there are "old wives' tales." One of the oldest, most fallacious, doctor-tales is regarding weight-gains in pregnancy. The doctor feels that patients who gain too much weight are more prone to develop toxemia of pregnancy, forgetting the fact that what he is really worried about is a sudden weight gain during the last trimester due to fluid retention. He feels that excessive weight-gains will produce a larger baby, forgetting the fact that it has been proven over and over again that there is no relation of weight-gain to baby size. The doctor feels that excessive weight-gain will prolong labor, forgetting the fact that this is utterly ridiculous if the boney pelvis is adequate.

In the end, the only importance of excessive weight-gain is from the standpoint of the patient's comfort and appearance and yet doctors will emphasize and re-emphasize to the patient the terrific importance of their excessive weight-gains, so that the weight becomes one of the most prominent apprehensions of the pregnant woman. It is a time-saver for the doctor, but it makes our little querulous primigravida more querulous than ever. It is human nature to want something desperately that we can't have. The doctor's advice about weight-gain (plus the nervous apprehension

associated with it) only serves to increase the desire to nibble and eat sweets and gain.

The hemoglobin determination in pregnancy represents another quick time-saver for the doctor. A patient can be startled quite effectively upon learning that her hemoglobin is dropping. It's supposed to drop because the blood volume increases and the blood dilutes. After the baby is born the blood volume contracts, the blood concentrates and the hemoglobin goes up. Normal hemoglobin is 10 gm. or more per 100 cc. Only 25 per cent of pregnant women actually have anemia—another fear for the hopeless querulous primigravida which could be avoided.

One of the matters that doctors like to talk about and probably over-emphasize and thus create some worry, is that of the importance of calcium. In all probability the old saying "for every child a tooth" is not because of lack of calcium. The Chinese diet is notoriously lacking in calcium and yet the Chinese women have very little dental caries. When one considers the long-time metabolism of the teeth, calcium has obviously no importance.

Calcium is, in all probability, only important when there are muscle cramps and tetany. When this occurs the diet is calcium-deficient and the patient should be given calcium, usually not the phosphate, which tends also to produce leg cramps.

In the last few years there has arisen a new terrifying spectre for the poor primigravida and that is when she finds she is Rh-negative.

We could go on for a long time naming startling but normal conditions and changes which can worry pregnant women. The doctor's duty should be to interpret these conditions and changes for the patient and present them to her without eliciting worry by careful, thoughtful explanation.

Time will not permit me to go into the horrors of the labor room for our poor little primigravida but improvements are coming. New hospital construction will provide individual labor rooms. Nurses are learning the importance of the kindly attitude. Doctors are learning better anesthetic methods and getting away from the raving maniac "scopolamine jags." Perhaps someday the primigravida will not be so terribly querulous.

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Minneapolis 2, Minnesota

The Confused Senior Citizen

J. T. PEWTERS, M.D.
Minneapolis, Minnesota

EVERY DOCTOR, whether rural or urban, who has practiced in Minnesota for fifteen to twenty years remembers the typical family unit of that era. This unit consisted of Mother, Father (probably out of work), four or five children and either Grandma or Grandpa or both, or even an elderly aunt.

The elder senior citizen was not confused *then*. First, there were fewer elderly people. Recent censuses, geriatric studies, and medical papers of countless numbers all point out the rapidly increasing number of people over sixty-five. Second, the elder senior citizen was a part of the family. They belonged—and were useful. How were they useful? They baby-sat, washed dishes, helped cook, mended and darned, did odd repair jobs and other so-called menial, but necessary, tasks. They were useful and what is more important, they felt needed.

Contrast the present-day family unit—Mother, Father, and two children in a two-bedroom rambler. Where are Grandma and Grandpa? They are either living alone in their own house with Grandpa retired, or in a drab rented room, rest home or institution—not needed, not wanted, not useful, and certainly confused.

Maybe these two contrasting pictures will help us understand why loneliness, idleness, helplessness, hopelessness, lack of social interests, and absence of physical outlets lead to the confused senior citizen.

Twenty years ago the physical energy in running the home was greater. There were potatoes to be peeled, vegetables to be scrubbed and bread to bake. There was no going to the freezer and pulling out a TV dinner that even has the calories counted for the reducer. Laundry was no simple problem. The automatic washer and dryer are present-day necessities. The extra hands provided by the elderly person were needed and useful. Now Grandma is not even needed to baby-sit. That task is taken over by the teenagers who use the money thus earned to buy Elvis Presley records.

The problem of the confused aged individual constitutes a major challenge of contemporary society. Loneliness, idleness, helplessness and hopelessness all lead to a confused senior citizen. The confusion of the aged can no longer be satisfactorily explained away by the reference to the word "senile"; but rather the true causes must be met and solved.

Obviously, the solution to the problem of our confused senior citizen is to make him useful, needed and wanted. If only it were that simple and easy. Fortunately, much progress is being made to attain this goal. We have to realize that not all mental disturbances in the older person are due to senile or arteriosclerotic dementia. The emotional problems may be precipitated by medical, psychological or social conditions.

Medically, there are now countless worthwhile medicaments and procedures at our disposal and more are being added daily to help the physical side of our older person. The list is long—the sedatives, the stimulants, the androgens and estrogens, the protein tissue builders, the tranquilizers (horrid word—NO), and so forth. More important than all these drugs is the realization that our senior citizens are an entity to themselves. The field of geriatrics is taking its place in medicine and making itself felt just like pediatrics did years ago.

What about the social-psychologic progress to unconfuse the confused? What is being done, or what can be done for the confused elderly citizen? To mention a few of the plans in force now—in Philadelphia¹ the organization called "Meals on Wheels" delivers hot nutritious balanced meals five days a week to lonely and infirm oldsters. "Meals on Wheels" started in England and is spreading through the United States. Certainly assured adequate nutrition will keep some of our older people out of state institutions.

In England² recognition has taken place of the stress and strain imposed on relatives caring for aged neurotic confused oldsters in their homes. A

Presented in the Symposium on Mental Health, Minnesota State Medical Association, Minneapolis, May 24, 1958.

THE CONFUSED SENIOR CITIZEN—PEWTERS

plan of "six weeks in and six weeks out" has been developed. The older person spends six weeks in an institution and six weeks at home. This gives the family unit of today a respite. Our first family unit, as described, had no choice but to keep Grandma with them all the time. In that era there was neither money nor a place to send the older person to give the family a rest. Many of our families in the second described unit would or could keep their elderly relatives with them if they knew they both could have rest periods. Even the older person likes the company of people his own age level.

New York City has two controlled programs to meet the special needs of the individual older people. Plan One—day centers for persons over sixty years of age, professionally supervised, offer planned programs with a wide choice of activities (including arts and crafts, trips, excursions, discussions, performance with instrumental, choral and acting groups, and participation in committee assignments.) Plan Two—A Senior Citizen Service Corps for persons over sixty years of age engaged in voluntary community service, which includes visiting hospitalized or homebound older persons and performing simple services for them. Projects such as packaging surgical supplies for voluntary hospitals and sewing for the cancer committee, et cetera, are also included in their program.

Closer to home, we have much progress being made to understand the problems of our elderly confused citizen. On November 9, 1956, the Hennepin County Town Meeting on Aging³ was held. This meeting was sponsored by the Community Welfare Council, a division of the Community Chest and Council, in response to a request from the Governor of Minnesota, Orville L. Freeman. The problems of aging were discussed under many headings including community planning, adult education, employment, health, housing, recreation and social work, pre-retirement counseling, and social welfare.

In Minneapolis, we have the Council House for Senior Citizens. The number-one project in any program to unconfuse the senior citizens should start with a center where the oldsters can go to be useful, needed and wanted. Our efforts will then be directed toward the extension of vigor, enthusiasm and usefulness of our oldsters.

Our present "society" is spending much energy toward youth. With longer life expectancy and more old people swelling our population, totals

with fewer oldsters being taken care of by strong family units, we must direct more of "society's" energy to the senior citizen.

Bartz⁴ states that purposeful activity is the most potent agent in the fight against premature deterioration. Aring⁵ maintains that isolation is the cause of senility. Neither improvement in medical care nor the expected increase in the number of older people developing psychoses due to their longevity explain the increase in mental hospital admissions of people over sixty-five.

Isolation—the feeling of being not wanted or needed does explain the increase.

Therefore, we must direct our thoughts and energies to keeping the oldster busy—enlarge his recreational interests, develop his hobbies, widen his educational aspects, and make him feel wanted.

What role does the practitioner—the family doctor—play in this important ever-enlarging field? The social and emotional causes of failure in our patients must be met at a much earlier age than sixty-five or when actual confusion sets in. Our patients must be reached at an age-level of forty-five to fifty-five years so we can help them either delay or allay this thing we call confusion in the older years.

The medical needs of the elderly citizen are well taken care of. The social-emotional needs of elderly citizens still must be met.

Summary

In this paper, I have attempted to show why the senior citizen is confused and feels not wanted or needed. A brief random sampling of what is being done to change this situation is pictured. The 18,000 separate articles⁶ published on geriatrics from 1936 through 1956 show that the medical profession is aware of its responsibility.

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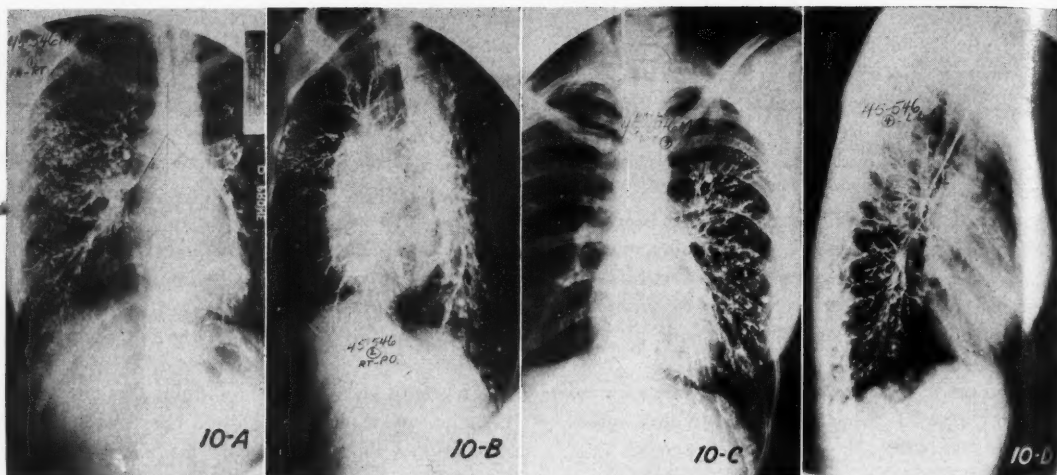


Fig. 10 (Case No. 45-546. (a) Postero-anterior and (b) right posterior oblique views of normal right lipiodol bronchograms. Note the peripheral filling, and some alveolar filling, a frequent and undesirable feature of this type of contrast medium. (c) Postero-anterior and (d) left lateral views. Note relatively poor peripheral filling due to left-sided emphysema, with very little alveolar filling.

Broncho-pulmonary Segmental Anatomy and Bronchography

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PULMONARY segmental resection or excision of a small local area of disease in a portion of a segment requires an exact definition of the location and extent of involvement for the benefit of the thoracic surgeon. The tendency of certain lesions to relate themselves to specific pulmonary segments or even certain bronchial sub-segments is of great clinical significance to the chest diagnostician. The roentgenologist obviously must describe pulmonary lesions in terms of segmental distribution and bronchial supply. The facts of bronchopulmonary segmental anatomy have been firmly established in recent years; the terminology previously used in description of the anatomical location of disease has been varied and confusing. A simplified, standardized, and universally-accepted system of nomenclature would unify our common conception of the location and limits of pulmonary and bronchial disease. Familiarity with the basic normal segmental and bronchial pattern and the significant variations, is a responsibility

that must be accepted by all physicians interested in pulmonary disease. The investigations of Boyden¹ and his associates have made available excellent bronchopulmonary anatomical diagrams and his suggested terminology and system of enumeration is ideally suited to meet the modern-day needs of the thoracic surgeon, the internist and the roentgenologist.

Historical Review

The detailed history of the development of our knowledge of the anatomy of the bronchial tree has been reported by Boyden.¹ The facts of interest to the roentgenologist will be briefly reviewed, based largely on Boyden's historical survey.

As early as 1685, Diemerbroeck, in Utrecht, produced a diagram displaying all of the now-recognized bronchial segments. Aeby, in Germany, in 1880, established the fact of asymmetric branching of the bronchial tree; and, Hasse, in 1892, showed in his drawings the bronchial tree in the framework of the lung. Ewart, in England, in 1889, published extremely detailed and somewhat com-

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BRONCHO-PULMONARY SEGMENTAL ANATOMY—BORMAN

fusing diagrams, and pointed out that the lung must be divided into segments smaller than lobes. In this country, Kramer and Glass, in 1932, described the "bronchopulmonary segment." They

SEGMENTAL BRONCHI

Superior lobe (Right)		Superior division (left superior lobe)	
B ¹ - Apical bronchus		B ¹ plus 3 - Apical-posterior bronchus	
B ^{1a} - apical ramus		B ^{1a} , B ^{3a} - apical ramal	
B ^{1b} - anterior ramus		B ^{1b} , B ^{3b} - anterior and posterior ramal	
B ² - Anterior bronchus		B ² - Anterior bronchus	
B ^{2a} - posterior ramus		B ^{2a} - posterior ramus	
B ^{2a} 1 - superior subramus			
B ^{2a} 2 - inferior subramus			
B ^{2b} - anterior ramus		B ^{2b} - anterior ramus	
B ³ - Posterior bronchus			
B ^{3a} - apical ramus			
B ^{3b} - posterior ramus			
Middle lobe (Right)		Inferior (lingular) division (Left)	
B ⁴ - Lateral bronchus		B ⁴ - Superior lingular bronchus	
B ^{4a} - posterior ramus		B ^{4a} - posterior ramus	
B ^{4b} - anterior ramus		B ^{4b} - anterior ramus	
B ⁵ - Medial bronchus		B ⁵ - Inferior lingular bronchus	
B ^{5a} - superior ramus		B ^{5a} - superior ramus	
B ^{5b} - inferior ramus		B ^{5b} - inferior ramus	
Right inferior lobe		Left inferior lobe	
B ⁶ - Superior bronchus		B ⁶ - Superior bronchus	
B ^{6a} - medial ramus		B ^{6a} - medial ramus	
		B ^{6a} 1 - paravertebral branch	
		B ^{6a} 2 - posterior branch	
B ^{6b} - superior ramus		B ^{6b} - superior ramus	
B ^{6c} - lateral ramus		B ^{6c} - lateral ramus	
B ⁷ - Subsuperior bronchus		B ⁷ - Subsuperior bronchus	
BX [*] (10) - accessory subsuperior bronchus		BX [*] (9), BX [*] (10) - accessory subsuperior bronchus	
B ⁷ - Medial basal bronchus		B ⁷ - Medial basal bronchus	
B ^{7a} - anterior ramus		B ^{7a} - lateroanterior ramus	
B ^{7b} - medial ramus		B ^{7b} - medioanterior ramus	
B ⁸ - Anterior basal bronchus		B ⁸ - Anterior basal bronchus	
B ^{8a} - lateral ramus		B ^{8a} - lateral ramus	
B ^{8b} - basal ramus		B ^{8b} - basal ramus	
B ⁹ - Lateral basal bronchus		B ⁹ - Lateral basal bronchus	
B ^{9a} - lateral ramus		BX [*] (9) - accessory subsuperior ramus	
		B ^{9b} - basal ramus = B ⁹	
B ^{9b} - basal ramus		B ¹⁰ - Posterior basal bronchus	
B ¹⁰ - Posterior basal bronchus		BX [*] (10) - accessory subsuperior ramus	
BX [*] (10) - accessory subsuperior ramus		B ^{10a} - laterobasal ramus	
B ^{10a} - laterobasal ramus		B ^{10b} - mediobasal ramus	
B ^{10b} - mediobasal ramus			

Fig. 1. Boyden's suggested bronchial terminology. (From Boyden, Edward A.: *Dis. Chest*, 15:6, June, 1949.)

injected fluid dyes into the main bronchial divisions and produced the first diagrams of the surface distribution and relationship to the thoracic cage by means of bronchograms. Refinements in segment analysis were added by Nelson (1934) and Lucien and Weber (1932-1936). (The above portion of the review from Boyden).¹ Churchill and Belsey² (1939) showed that the pulmonary segment is a surgically-removable unit and this profoundly stimulated the need for complete analysis of smaller bronchial structures, as well as for determining the exact extent of disease processes. Peirce and Stocking³ (1939) published detailed bronchial diagrams including oblique projections as seen on the roentgenogram with a complex latin-based system of terminology.

Foster-Carter⁴ (1942) published excellent de-

tailed bronchial diagrams, including lateral projections. The significant studies of Brock⁵ (1942-1944) accurately diagrammed the relationship of lung segments to the thoracic wall and his Wood's metal casts of the bronchial tree produced excellent detailed diagrams of the normal distribution and configuration of the bronchial tree as seen in bronchograms, including the major variations. Jackson and Huber⁶ (1943) introduced a now widely-accepted system of bronchial terminology, with relatively simple and accurate diagrams of the usual pattern of branching, with drawings of the bronchoscopic appearance of the orifices. Appleton⁷ (1944) described frequent variations in the mode of branching of the right upper lobe bronchus. Foster-Carter and Hoyle⁸ (1945) demonstrated the radiographic appearance of the segments in disease processes, identifying collapse and consolidation. Boyden,¹ of the University of Minnesota, who considers his studies a continuation of Brock's⁵ work, after years of painstaking and meticulous lung dissections and injections (1945-54), presented a highly detailed analysis of the normal bronchial and vascular patterns, both segmental and subsegmental, with also the significant variations. The prevailing pattern of each lobe has been firmly established by most exacting and detailed investigations of large numbers of each lobe. The normal pattern, as well as the significant variations, have thus been placed on a statistical basis. A simplified numerical system of identification of the segments and sub-segments, invaluable to the roentgenologist, has also been presented. His system is basically the Jackson-Huber terminology with minor variations.

Temple and Evans⁹ (1950) using the Jackson-Huber terminology, reviewed the roentgen features of pulmonary segmental lesions, chiefly from plain films, but a few demonstrations of contrast filling of various segments were included. Krause and Lubert¹⁰ (1951) stressed the application of anatomic knowledge of the various subsegments and the importance of demonstrating bronchial occlusion by means of bronchograms. Their diagrams are based on the Jackson-Huber and Boyden systems of terminology. Bronchographic demonstrations of the entire bronchial tree, or complete mapping of all the segmental and important subsegmental branches, is not presented in these publications.

A particularly significant publication from the standpoint of bronchopulmonary segmental radio-

graphic interpretation is that of Kane¹¹ (1952). He presented accurate diagrams of the radiographic density of distributions of the various bronchopulmonary segments as seen in the plain film of the chest, which can be correlated readily with the bronchial branches supplying these areas. He employed the Jackson-Huber nomenclature.

Hoden and Crone¹² (1953) reported on the use of oily Dionosil[®] as a bronchographic contrast medium, which they considered adequate, with little irritation and with only slight after-effects.

Crellin *et al*¹³ (1954) emphasized the importance of complete five-lobe filling of the bronchial tree, using the trans-nasal endobronchial catheter method of administration of Lipiodol.[®] No post-bronchoscopic complications were encountered in a series of 503 cases. Excellent bronchograms, showing complete fillings of the normal bronchial tree, were reproduced. Norris and Stauffer¹⁴ (1954) published bronchograms of outstanding quality with adequate filling of the entire bronchial tree, using both aqueous and oily Dionosil.[®]

Most excellent bronchograms and accompanying colored diagrams, which serve as valuable reference material, were published in 1955 by Lehman and Crellin.¹⁵ Nice and Azad¹⁶ (1956) reported on the use of oily and aqueous Dionosil[®] in seventy-four

cases, noting no unusual irritability, little tendency toward alveolar filling, better diagnostic film studies because of unhurried examinations and rapid clearing of the contrast material from the pulmonary fields.

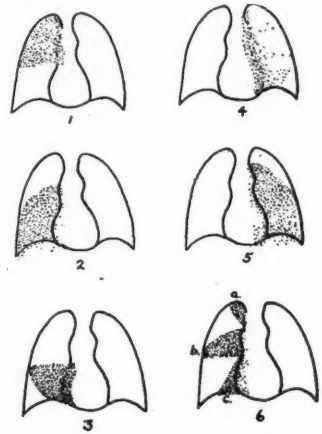
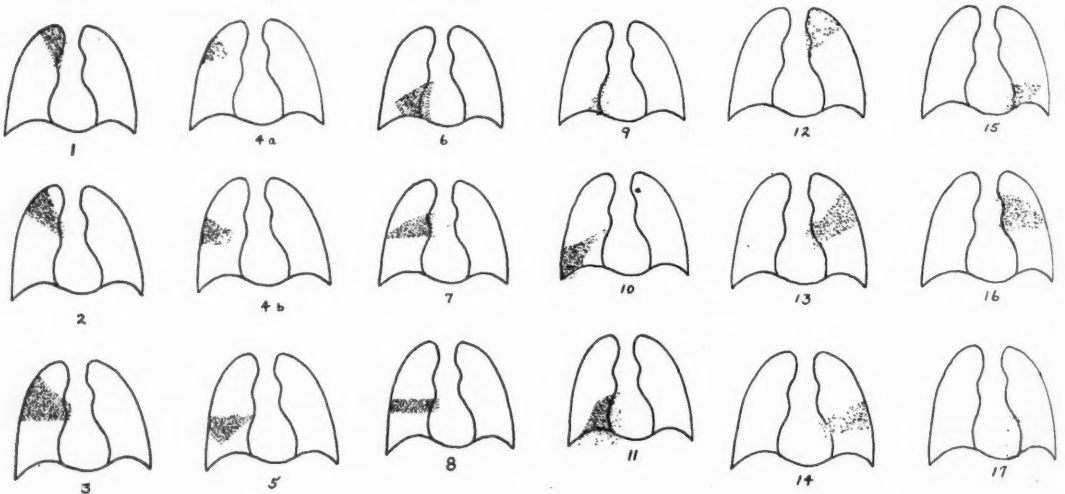


Fig. 2. Normal anatomic distribution of lobes and segments, showing density distribution when involved with diseases, on the posterior-anterior film of the chest. (1) Right upper lobe=RUL; (2) Right lower lobe=RLL; (3) Right middle lobe=RML; (4) Left upper lobe=LUL; (5) Left lower lobe=LLL; (6) Accessory lobes, (a) Azygos lobe, (b) Duvé's lobe, (c) Inferior accessory lobe. (From Kane, Irving J.: *Radiol.*, 59:229-237, August, 1949.)



Figs. 3-5. Normal anatomic distribution of lobes and segments, showing density distribution when involved with disease, on the postero-anterior film of the chest. (1) Apical segment, RUL; (2) Posterior segment, RUL; (3) Anterior segment, RUL; (4a) Axillary portion of posterior segment, RUL; (4b) Axillary portion of anterior segment, RUL; (5) Lateral segment, RML; (6) Median segment, RML; (7) Apical (superior) segment, RLL; (8) Subapical segment, RLL; (9) Median basal segment, RLL; (10) Anterior and lateral basal segments, RLL; (11) Posterior basal segment, RLL; (12) Apical-posterior segment, LUL; (13) Anterior segment, LUL; (14) Superior segment (lingula), LUL; (15) Inferior segment (lingula), LUL; (16) Apical (superior) segment, LLL; (17) Posterior basal segment, LLL. (From Kane, Irving J.: *Radiol.*, 59:229-237, August, 1952.)

Terminology

The Jackson-Huber⁶ system of bronchopulmonary terminology is now widely accepted and used, and the refinements added by Boyden have

vides a short, concise and accurate manner of describing the location and extent of disease in terms whose meaning is unmistakable. It serves as a common ground of understanding, a signifi-

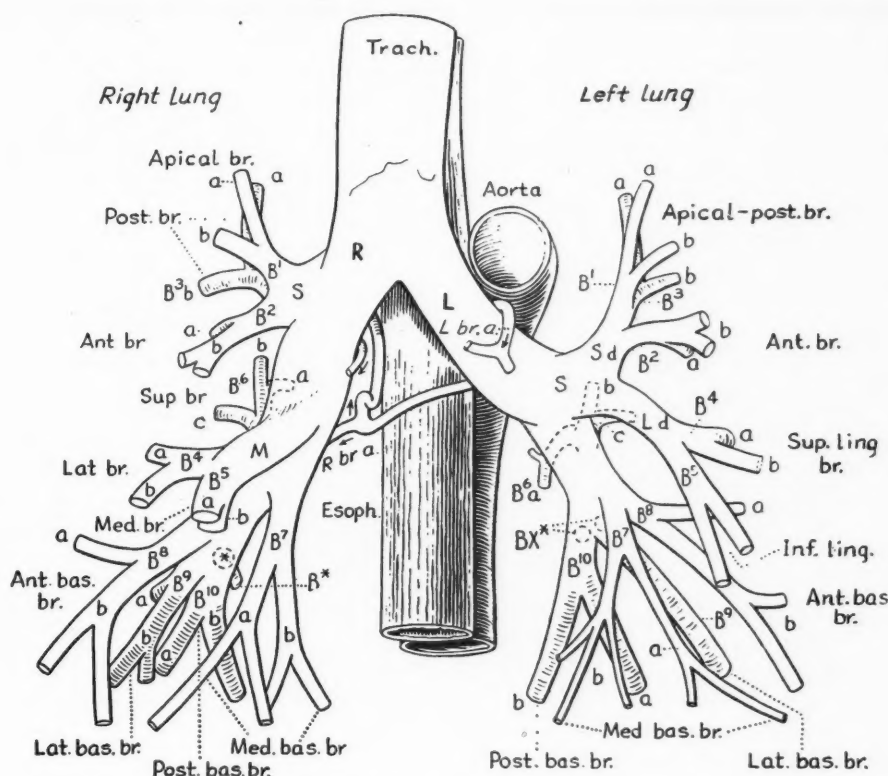


Fig. 6. Orthodox plan of prevailing bronchial pattern in hypothetical pair of lungs. (From Boyden, Edward A.: *Dis. Chest*, 15:6, June, 1949.)

made available a highly accurate and relatively simple basic standard for those interested in bronchial disease. The work of Brock⁵ and diagrams of Kane¹¹ have given the roentgenologist reliable standards for recognizing the various segments of the normal lung in relationship to the thoracic wall as they appear on the roentgenograms. A working knowledge of these basic fundamentals is mandatory for localization, evaluation and description of bronchopulmonary disease, not only for the roentgenologist, but for the thoracic surgeon and the clinician as well.

The use of the Boyden numerical system of bronchial nomenclature at St. Mary's Hospital, Minneapolis, has been of definite value in standardizing the description of lesions. It pro-

vides a short, concise and accurate manner of describing the location and extent of disease in terms whose meaning is unmistakable. It serves as a common ground of understanding, a signifi-

Pulmonary Segmental Anatomy

The diagrams of Kane⁵ are invaluable for demonstration of the various pulmonary segments and subsegments as they appear on the postero-anterior roentgenogram. They should be familiar to anyone who attempts interpretation of chest films. The density distribution of the lobes and segments is demonstrated in Figures 2 through 5. Ten segments are described in the right lung and eight in the left lung because of the common stem origin of the apical-posterior segment, and the assumed absence of a distinct median basal segment in the left lower. The relationship and effect of the various pulmonary segments on the margins

of the heart and aorta are of distinct value in localization of pulmonary densities from the single postero-anterior film examination. Segmental densities adjacent to a cardiac or aortic segment usually produce an indistinct margin, those behind or in front accentuate the overlapped margin. The pul-

ment is to be thoroughly investigated, possibly by the addition of multiple spot films.

Bronchial Anatomy

Boyden's¹ studies have resulted in his publication of an orthodox plan of the bronchial tree based on

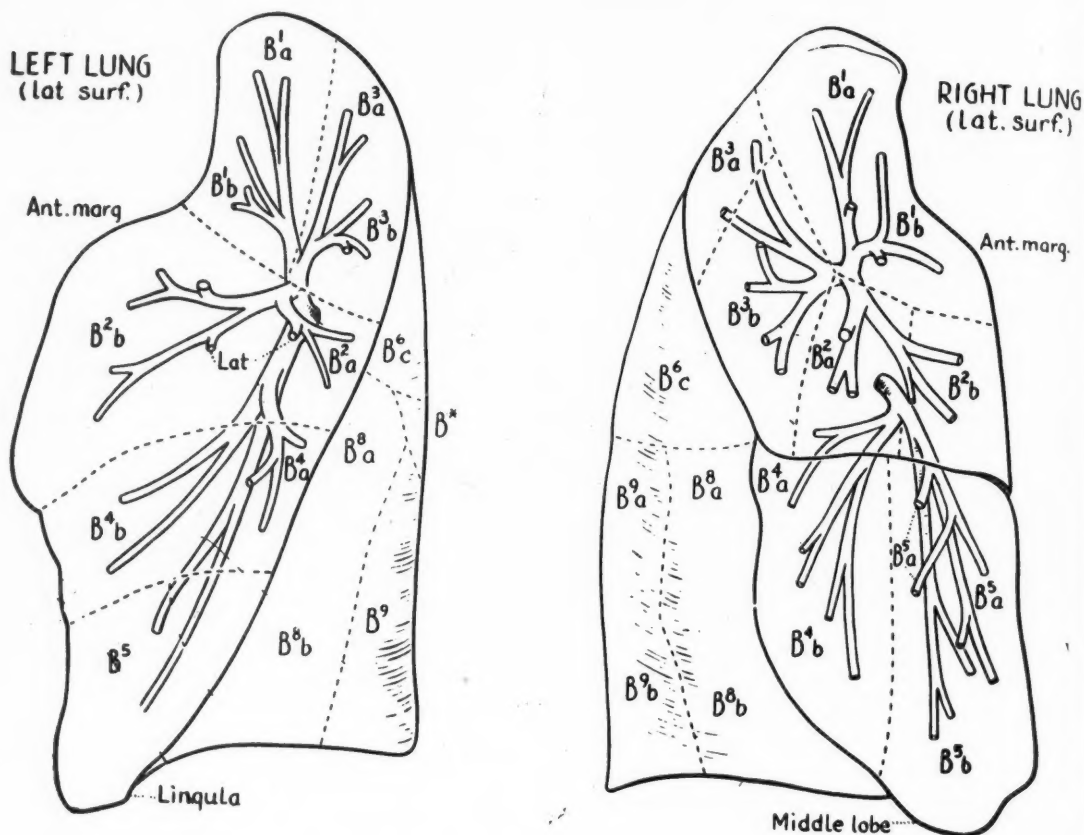


Fig. 7. Prevailing mode of branching of the right upper and middle lobes, and left upper lobe. (From Boyden, Edward A.; *Dis. Chest*, 15:6, June, 1949.)

monary segments are quite constant in size and shape, but variations occur and limitations in accurate localizations must be recognized. Relationships are altered by overlapping shadows as well as by emphysema, atelectasis, fibrosis, and by pleural and pericardial effusions. Lateral and oblique projections are, therefore, usually required for accurate localization and for determining the extent of a disease process. With multiple projections made preliminary to the bronchographic investigation, it is usually possible to predict which bronchial segment or subsegment is involved. Thus, the roentgenologist should know in advance which seg-

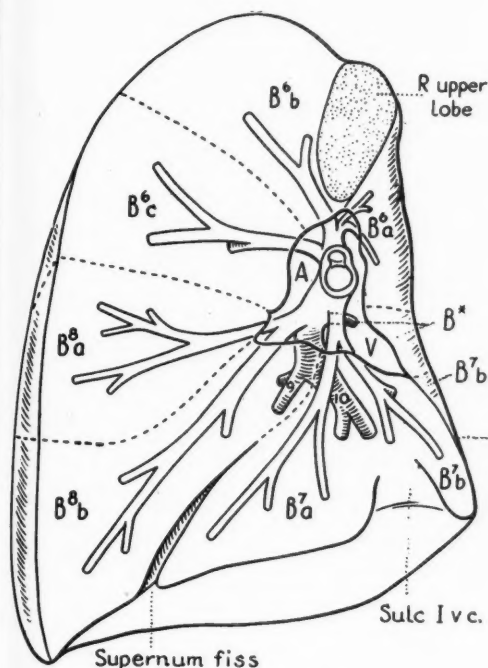
a hypothetical pair of lungs that combines the prevailing patterns of all the bronchial segments, as well as their projection onto the lung surfaces (Fig. 6). The prevailing bronchial distribution in both lungs, including the important subsegments, are demonstrated in greater detail and in oblique projections in Figure 7 (upper and middle lobes) and Figure 8 (lower lobes). A diaphragmatic view of the segmental distribution and the roentgenologically-important relationship of the segments to the heart is shown in Figure 9. Ten major branches are presented on each side, numbered one to ten, with the important subsegments identified by let-

BRONCHO-PULMONARY SEGMENTAL ANATOMY—BORMAN

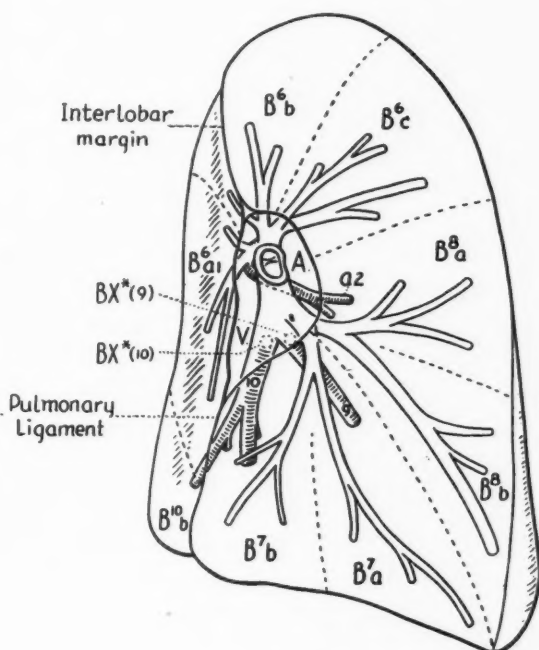
ters "a" and "b". Further divisions of the sub-segments receive numbers "1" and "2". Anatomic features and variations, based on Boyden's¹ analysis, significant to the roentgenologist, are:

Right Upper Lobe (B^{1-3}).—The main bronchus,

two subdivisions of the posterior branch (B^3) arise independently in 16 per cent of cases, thus producing a quadrivial pattern, or four segments in the lobe. The occurrence of an independent branch of (B^3) has often been considered an "axillary" branch.



RIGHT LOWER LOBE
(Ant. surface)



LEFT LOWER LOBE
(Ant. surface)

Fig. 8. Prevailing mode of branching of lower lobes. (From Boyden, Edward A.: Dis. Chest, 15:6, 1949.)

which is eparterial in location, is very short, branching almost immediately directly opposite the carina. The short upper lobe bronchus adds to the hazard of right pneumonectomy. It is prevalently trifurcate (46 per cent) with the first and highest branch as visualized on the postero-anterior bronchogram being the apical, next the posterior, and finally and lowermost, the anterior branch. The three main branches, apical (1), anterior (2), and posterior (3), are present, however, in only 38 per cent. The remainder consist of three bifurcate types and one quadrivial type. In 28 per cent of cases the anterior branch of the apical bronchus arises from the anterior bronchus (B^2). Hence, drainage from an apical lesion may take place through the bronchus of the anterior segment. The

Middle Lobe Bronchus ($B^{4,5}$).—This bronchus descends obliquely forward and downward from the right primary bronchus. Its length averages 18 mm. and because of its length is susceptible to lymph node pressure. Lymph node pressure commonly occurs at a distance of 0.5 to 2 cm. below the take-off of this bronchus. In 62 per cent the main branches are the lateral (B^4) and medial (B^5). A superior-inferior relationship is present in 18 per cent. The plane between the medial and lateral segments is frequently crossed by large arteries (53 per cent).

Right Lower Lobe Bronchus (B^{6-10}).—The superior segment bronchus (B^6) arises postero-lateral to and very slightly below the middle lobe orifice.

BRONCHO-PULMONARY SEGMENTAL ANATOMY—BORMAN

It usually bifurcates (86 per cent) into a lateral branch (B^6c) and to a superior and medial branch B^6b and B^6a . The medial branch is small, resulting in a horizontal capping of the basal segment by the superior segment (62 per cent). The branching is quite different on the left, wherein the medial branch (B^6a) is large.

of B^8 or B^* . Major variations of the lower lobe bronchi are relatively infrequent.

Left Upper Lobe Bronchus ($B^1 + 3$ and 2 , B^4 and 5).—These branches correspond to the right upper and middle lobe bronchi. Both branches originate from a single pedicle instead of as two separate

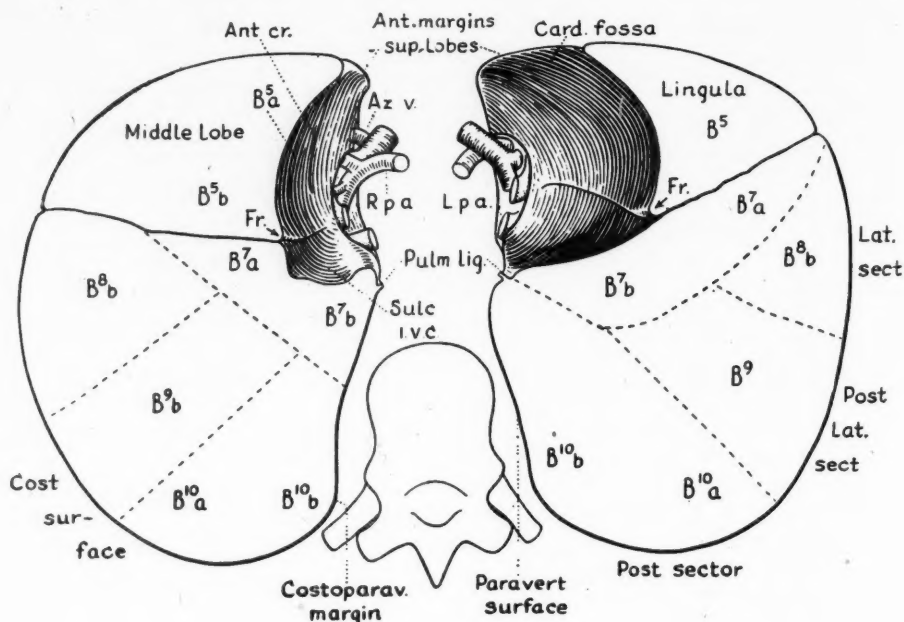


Fig. 9. Diaphragmatic view of the segmental distribution. (From Boyden, Edward A.: *Dis. Chest*, 15:6. June, 1949).
Fig. 10. See page 820.

A subsuperior bronchus (B^*), located dorsally a short distance below the superior bronchus, is present in 62 per cent of cases. This branch (B^*), or high branches of B^{10} , designated BX^* , supply a constant transverse wedge of tissue lying between the superior segment and the basal segments. Because of its constancy (100 per cent), it has sometimes been considered an accessory segment. Both the superior and subsuperior bronchi, because of their posterior locations, are frequent sites of lung abscess and aspirated material. Four basal segments are present: B^7 , the medial basal branch, has the highest take-off medially, at an average distance of 1 cm. below B^6 ; followed by B^8 , the anterior segment anteriorly; B^9 , the lateral segment; and, finally B^{10} , the posterior segment. The latter two have a common stem. B^7 is absent in 14 per cent of cases, its place being taken by branches

trunks, as on the right, and the branching is prevalingly bifurcate (73 per cent). The pedicle is relatively low on the main bronchus and its location is accordingly hyparterial. B^1 and 3 , the apical and posterior segments of the upper branch, have a common origin. In 27 per cent the division of the upper lobe is trifurcate, due to changes in size or location of the anterior segment of the upper branch (B^2). Splitting of the anterior branch (B^2) occurs in 33 per cent of cases. A frequent and important variation is the origin of the anterior branch of the apical segment from the bronchus of the anterior segment (38 per cent). Spread of apical disease to a large portion of the upper lobe is thus possible and (as on the right) drainage from the anterior segment may actually originate in the apex. The posterior ramus of the anterior upper lobe segment (B^2a) is absent in

35 per cent of cases, and it is replaced by a branch from the lingular segment in 12 per cent. This anomalous crossing of the fissure by the branch from the lingula is, therefore, an occasional anatomical hazard in linguelectomy. A deep upper lobe cleft produces a "middle" lobe in 8 per cent of cases. The branches of the lingular segment are practically always superior and inferior in location (85 per cent), instead of lateral and medial as on the right. A lateral-medial pattern is present, however, in 15 per cent of cases. B^{3b}, the important posterior ramus of the posterior upper lobe segment, sometimes called the "axillary" branch, is displaced downwardly in 48 per cent of cases. B^{2a} and B^{3b} are frequent sites of lung abscess on either side. Unusual development of these subsegmental bronchi has led to some confusion in nomenclature in regard to separate "axillary" branches.

Left Lower Lobe (B⁶⁻¹⁰).—The lower lobe bronchus arises 5 cm. below the carina, but because of the obliquity of the left main bronchus the point of origin is slightly higher than on the right. Incidentally, the oblique position of the left main bronchus produces a definite difference in the angulation of the two main bronchi from the midline as measured at the carina. The average normal angle is approximately 30 degrees on the right, 45 degrees on the left (personal observation). This is a valuable index since shift of the bronchi incident to atelectasis of the lower lobes changes the normal angle relationships. B⁶, the superior segment orifice, is located posteriorly 10 to 12 mm. below the origin of the upper lobe bronchus. The common stem of the lower lobe is, therefore, short but slightly longer than on the right. B⁶ bifurcates in 85 per cent of cases, with the formula B^{6a} (medial) and B⁶ (b and c) (superior and lateral) in 43 per cent. The medial ramus of the superior segment (B^{6a}) is much larger than on the right and extends two-thirds or more of the distance to the diaphragm in 57 per cent of specimens. This produces an oblique capping of the lower lobe by the superior segment in 89 per cent of cases. This capping is prevailingly horizontal on the right (62 per cent). A distinct subsuperior branch is present in only 29 per cent on the left (62 per cent on the right). Its position is often supplied by high branches of the lateral and posterior basal branches. The basal segments most commonly bifurcate (87 per cent) from the basal trunk, and the pat-

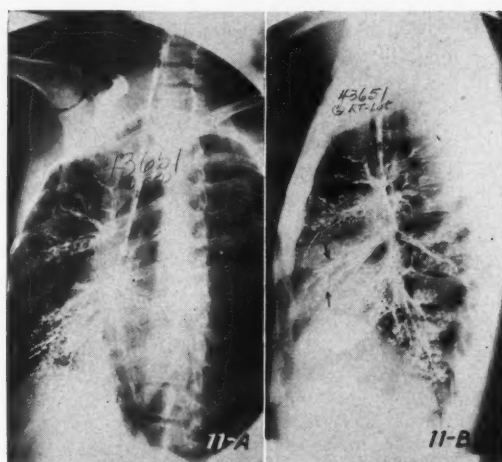


Fig. 11. Case No. 43651. (a) Right posterior oblique and (b) right lateral views. Localized middle lobe atelectasis and bronchiectasis visible in lateral, but not in oblique view. The value of multiple views indicated.

tern of B⁷ and ⁸, and B⁹ and ¹⁰, is the most common (67 per cent). B⁷, the median basal branch, is shifted laterally as compared to the right side and together with B⁸ arises at an average distance of 17 mm. below B⁶. In 10 per cent of cases, B⁷ arises independently as on the right. B⁸ and ⁹ show no significant variations, but B¹⁰ supplies the median paravertebral area of B^{7b}.

Bronchography

Knowledge of the anatomy of the normal bronchial tree and of its significant variations is an absolute prerequisite to an intelligent analysis of the bronchogram. All ten segmental branches must be visualized and counted off, with subsegmental and smaller peripheral branch filling highly desirable. Only in this way can each branch be identified, the position and relationship of the various segments to the thoracic wall ascertained, and the presence of disease processes and the extent of involvement established. Plain films, including lateral and oblique projections, are notably inadequate for this purpose. Predilection of certain disease processes for specific branches, notably lung abscess and aspiration disease in B⁶, B⁷, B¹⁰, and B^{2a}, and B^{3b}, tuberculosis in B¹ and ³, and inflammatory or tuberculous lymph node compression of the stem bronchus in localized middle lobe atelectasis, B⁴ and ⁵, make identification of the bronchus involved an aid in diagnosis.

Since segmental resection is now commonly undertaken, it is obvious that the thoracic surgeon

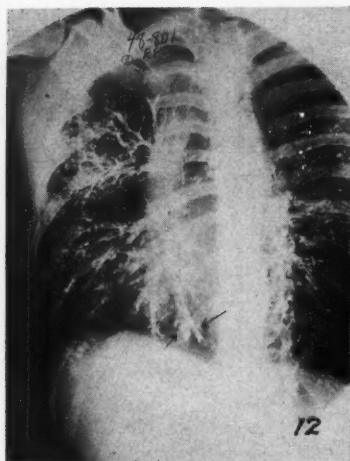


Fig. 12. Case No. 48,801. Right posterior oblique view. Typical localized bronchiectasis, B¹⁰. Note that B⁹, the medial branch of the middle lobe, is not involved. This is of surgical significance.

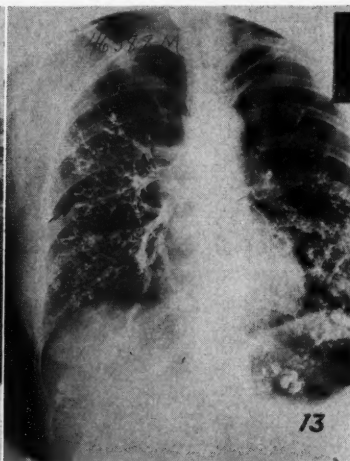


Fig. 13. Case No. 46588. Postero-anterior view. Bronchiectasis and atelectasis in B⁵, the medial segment of the middle lobe, and minimal involvement in B^{2b}, the anterior ramus of the anterior branch of the upper lobe. The importance of recognizing multiple lobe involvement is demonstrated.

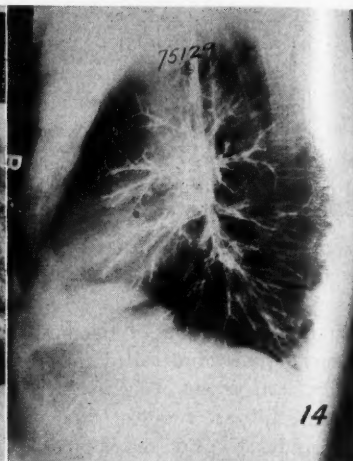


Fig. 14. Case No. 75129. Right lateral view. Very minimal localized bronchopulmonary inflammatory process (bronchiectasis?) in B^{3b} and B^{2b}—subsegmental branches of the anterior and posterior bronchi of the upper lobe.

must know in advance the exact segment or segments involved as well as the position in the thorax. Proper and efficient drainage of lung lesions is likewise facilitated by knowledge of their position in the thorax. Shift in position of bronchial branches, commonly the result of obstructive, atelectatic or fibrotic infiltrative processes, is highly significant from the diagnostic and surgical viewpoint. Multiple segment involvement is occasionally of diagnostic significance. Lesions involving, for example, both lateral (axillary) branches of the upper lobe, which originate from separate segmental bronchi, are not likely to be due to a single bronchus lesion (carcinoma). Identification of the involved bronchi, and the location and extent of the disease process, is accordingly of great diagnostic and surgical importance, and this information is obtainable only by complete bronchial mapping. Ascertaining the nature of the disease processes is greatly facilitated by the bronchogram in the following conditions. The chief roentgen signs very briefly stated are as follows:

Emphysema, local or generalized, usually produces a narrowed bronchial lumen with often filling of the terminal alveoli, somewhat suggesting a bud on a narrow stem.

Asthma produces a sharp, squared, cut-off of the peripheral branches due to mucous plugs. Unusu-

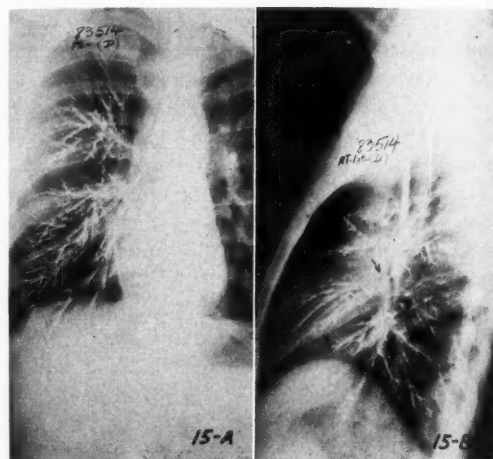


Fig. 15. Case No. 83514. (a) Right postero-anterior and (b) right lateral, with Dionosil (aqueous). Early "middle lobe syndrome." Typical location of lymph node compression B⁴⁻⁵ (central arrow).

pected local areas of bronchiectasis are often disclosed in asthmatic patients, according to Overholt.¹⁷ This observation has been confirmed in our series.

Diffuse bronchospasm is indicated by lack of filling of the peripheral branches.

Chronic bronchitis produces widened bronchi with often irregular, serrated margins, due appar-

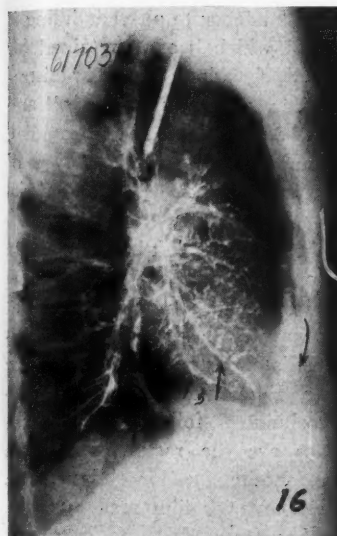


Fig. 16. Case No. 61703. Left lateral bronchiectasis in left basilar posterior and lateral branches, B⁹ and B¹⁰, with involvement also present in the inferior lingular branch B³—a common type of multiple segment involvement. Note marked downward displacement of the inferior lingular branch, and rotation anteriorly of the other upper lobe branches (arrow).



Fig. 17. Case No. 48663. (a) Postero-anterior and (b) right lateral.² Typical bronchiogenic carcinoma in a common location, B², the anterior bronchus of the upper lobe. The defect is also characteristic. Also note localized infectious process (alveolar filling) in B^{3b}, the posterior ramus of the posterior bronchus of the upper lobe.

ently to enlarged bronchial glands, the result of cystic degeneration, according to Duprez.¹⁸

Bronchiectasis produces widening of the lumen as well as saccular dilatations. Involvement is usually in multiple segments, rarely involving an entire lobe, and bilateral involvement occurs in about 30 per cent of cases. The lingular segment is involved in 60 per cent of cases of primary left basilar disease, and the right middle lobe in 45 per cent of cases of primary basilar disease, according to Overholt.¹⁹ Very minimal localized involvement in an unsuspected location, completely eluding other methods of detection, is a fairly common occurrence. Detection of these small but important lesions is possible only with complete five-lobe filling or full mapping of the entire bronchial tree.

Atelectasis, almost always associated with bronchiectasis, or bronchial obstruction, produces compact grouping of the branches, with decrease in size of the segments involved and change in position of the involved branches with secondary shift of the adjacent bronchial segments. Displacement or rotation of bronchial branches is often a striking feature of this process, necessitating review of the entire tree on the side involved from the standpoint of the number of branches visible, and their

position in the thorax. A shifted bronchus may overlap an area of bronchial block, and the absence of filling of one branch becomes obvious when the number of branches visible is reduced.

Lung abscess, often not localized, or single and frequently associated with bronchiectasis, produces large local accumulations of contrast material, with or without fluid levels. B⁶, B¹⁰, B³, and B^{2a} and B^{3b} are frequent locations.

Recent inflammatory lesions (pneumonitis) frequently result in an unusual degree of alveolar filling, confined to the segment or segments involved by the disease process.

Bronchial adenoma typically produces a smooth, rounded defect, usually in the proximal portion of the bronchial tree with secondary atelectasis distal to the lesion.

In our experience, the defect of *bronchiogenic carcinoma* is usually short and cone-shaped, occasionally irregular. A positive diagnosis of bronchiogenic carcinoma based solely on the appearance of the defect is not justifiable, however. Chronic granulomata, oil pneumonitis and silicosis may produce defects closely simulating the type of lesion seen in bronchiogenic carcinoma. In general, however, granulomatous lesions are more irregular

and more extensive than the defects of bronchiogenic carcinoma. A diagnostic sign highly suggestive of *alveolar cell carcinoma* has been described. Narrow, rigid, uniformly distributed, filled rather than coated bronchi, with absence of terminal filling are the main features, according to Zheutelin, Lasser and Rigler.²⁰

Thus, the presence of disease which may not be demonstrable by other means, its location and its extent, can be very precisely determined by good bronchographic studies, and the nature of the disease very frequently indicated with certainty.

Technique of Bronchography

We are convinced that bronchography is a team procedure, requiring the services of the clinician, who should select the patient, the anesthesiologist, whose services should always be immediately available, as well as that of the bronchoscopist and the roentgenologist and his staff of especially-trained technicians. General anesthesia is best employed in children. Proper and judicious preliminary explanation of the procedure to the patient by the clinician and bronchoscopist frequently allays fear, apprehension and emotional distress, which in turn produces a calm and co-operative patient, a factor very important in obtaining technically good bronchograms. Postero-anterior and lateral films of the chest previous to bronchoscopy are recommended. After preliminary general sedation and local preparation and anesthesia of the throat and trachea by the bronchoscopist, followed by bronchoscopic investigation, and aspiration of secretions, a catheter is placed in the trachea. The patient is then brought to the fluoroscopic room where the roentgenologist indicates the proper position of the catheter tip for each pulmonary segment. Proper rotation of the patient on the table during fluoroscopy is essential for complete filling of each segment. Every segment from B¹ to B¹⁰ must be supplied with contrast material so that, in the absence of obstruction, filling will be obtained. Spot films are usually made if any one segment fails to fill properly. Lipiodol® or Dionosil®, oily or aqueous, are the preferred contrast media. Lipiodol® is iodized poppy seed oil; Dionosil®, aqueous, is a 50 per cent suspension of propylidone combined with sodium carboxymethyl cellulose, sodium chloride and benzyl alcohol. Dionosil®, oily, is 60 per cent concentration in arachis oil. Chronic granulomas have been reported following iodized oil studies, according to Storrs²¹ and Belton,²² but not with

Dionosil®. A greater tendency to alveolar filling is noted with Lipiodol®, which is often retained for months. Temperature elevations after administration of Dionosil® occur, according to Norris,¹⁴ and this observation has been confirmed in our studies. The rapid and almost complete elimination of Dionosil® from the bronchial tree is a very desirable feature.

Filling of both the right and left bronchial trees may be done at one examination, provided the clinician agrees and the condition of the patient at the time of study warrants a complete investigation, although a unilateral study is probably the procedure of choice. Film studies, using high kilovoltage Bucky technique, follow immediately. Routine projections are the recumbent lateral, posterior oblique, opposite anterior oblique, and, finally, the posterior-anterior film made upright. The delayed bronchogram made at an interval of thirty minutes to one hour is sometimes employed, especially if there is poor peripheral filling in certain areas of suspected bronchiectasis. It may demonstrate bronchiectasis not shown initially.^{23,24}

Figures 10 through 17 are representative bronchograms of conditions commonly encountered in private hospital practice. A thorough examination requires complete mapping of the ten segmental branches and their subsegments, multiple projections, and film studies of high technical excellence.

Conclusions

1. The Jackson-Huber system of bronchial nomenclature with Boyden's additions is a widely-accepted, simplified, and accurate plan for anatomic description of the bronchopulmonary segments and bronchial tree for usage by the clinician, bronchoscopist, pathologist, roentgenologist and surgeon, and all physicians interested in chest disease.

2. Familiarity with the appearance and location of pulmonary segmental densities in the plain film, and with the normal pattern of the bronchial tree and its variations as shown by bronchograms, is a basic fundamental for interpretation and evaluation of bronchopulmonary disease.

3. A proper bronchographic study, which requires complete mapping of the entire bronchial tree, establishes the presence, extent, and often the nature of bronchial disease and permits its accurate description and localization.

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(References are on Page 873)

Treatment of the Child Having Asthma

"All is not asthma that wheezes." With this aphorism in mind, the author delves into the differential diagnosis of conditions that may simulate asthma in a child. He emphasizes that the physician must treat the child having asthma, not just asthma in a child. A number of the older medicaments still play important roles in the management of acute allergic reactions in childhood.

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ASTHMA may be present in children of all ages. Its occurrence in infants has been particularly emphasized by Buffum.¹ Asthma affects a sufficient number of the patients in a general or pediatric practice to warrant a periodic review of management. The title of this paper has been selected specifically to emphasize the importance of individualization of treatment, thus emphasizing that one treats a child having asthma, not just asthma in a child.

Two relevant aphorisms have existed for some time. The first is "All is not asthma that wheezes,"² and the second is "All that wheezes is

asthma,"³ or its modification, "All that wheezes is asthma until proved otherwise." It makes little difference which one of these is remembered as long as one keeps in mind that asthma is not the only condition which produces wheezing dyspnea but that it is the most important one in childhood.

Differential Diagnosis of Asthma in Children

The syndrome of wheezing dyspnea, which is referred to as asthma, is caused by an acute allergic reaction, but it is simulated clinically by a number of other conditions that produce narrowing of the airway. Those which must be considered in the differential diagnosis in children are somewhat different from those in the adult (Table I).

A "rattle" in the throat due to an excess of saliva or mucus occasionally is met with in a

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TREATMENT OF CHILD HAVING ASTHAMA—LOGAN

TABLE I. CONDITIONS THAT MAY SIMULATE
ASTHMA IN CHILDREN

"Rattle" in throat due to excess saliva or mucus
Acute laryngotracheobronchitis
Acute bronchiolitis
Foreign body in bronchial tree
Bronchiectasis
Cystic fibrosis of pancreas
Lymphadenopathy, most common at bifurcation of trachea
Mediastinal tumor (including Hodgkin's disease)
Anomaly of great vessels at base of heart
Relaxed larynx
Retropharyngeal abscess
Pertussis
Dust bronchitis
Sighing dyspnea

small infant and sometimes has been mistakenly construed as asthma. Actually, it may represent at times a sign of infantile asthma.⁴ Acute laryngotracheal bronchitis sometimes is confused with asthma because of the degree of dyspnea. However, the dyspnea in this condition almost invariably is entirely inspiratory. The dyspnea of acute bronchiolitis is also chiefly inspiratory. Infants so affected are usually rather ill and have fever and a cough rather than a wheeze. Auscultation reveals many fine inspiratory rales but no wheezing rales.

The presence of a foreign body in some part of the tracheobronchial tree often causes wheezing. An asthmatoïd wheeze, as originally described by Jackson,⁵ frequently is evident if the foreign body is in the trachea or a main bronchus. The thick secretions associated with bronchiectasis often may narrow the airway and so simulate asthma. The pulmonary infection that is an integral part of the syndrome of cystic fibrosis of the pancreas may produce a bronchiectatic condition that in turn has been confused with asthma. One occasionally encounters a child having true allergic asthma and also cystic fibrosis.

The three conditions of mediastinal lymphadenopathy, mediastinal tumor and anomalies of the great vessels at the base of the heart may produce enough external pressure to encroach on the airway of the trachea or one of the main bronchi.

A relaxed larynx occurs only in early infancy. The stridor and difficulty in breathing are inspiratory. Retropharyngeal abscess is now seen only rarely. It produces narrowing of the airway above the larynx.

Pertussis causes cough but not wheezing, although children having asthma may have a persistent cough. Bronchitis resulting from dust⁶ was described originally in the so-called dust bowl in the southwestern part of the United

States a number of years ago. This possibility does not have to be considered unless one knows that the child has been exposed to a great deal of dust or finely divided particles of some sort in the inspired air. Sighing dyspnea⁶ is a functional condition that bears no real resemblance to asthma.

Pathologic Aspects

Asthma of allergic origin is caused by narrowing of the airway produced in three ways, namely (1) edema of the mucous membrane, (2) spasm of the bronchial musculature and (3) thick mucus (Table II). It is evident that asphyxia is the

TABLE II. PERTINENT PATHOLOGIC AND
PATHOLOGIC PHYSIOLOGIC CHANGES IN
CHILDREN HAVING ASTHMA

Edema of submucosa of tracheobronchial tree
Spasm of intrinsic bronchial musculature
Hypertrophy of smooth muscle
Secretion of thick tenacious bronchial mucus
Eosinophilia (bronchi and blood)
Asphyxia
Mucous plugs
Edema of larynx and tracheobronchial tree
Dehydration
Emotional unrest (anxiety)

result of obstruction of the airway due to the presence of mucous plugs or thick secretions or in some instances due to severe edema of the larynx and tracheobronchial tree. Dehydration occurs when the child is unable to ingest sufficient fluids to supply not only the usual needs but the additional amount needed to replace the excessive amount lost through rapid breathing. Anxiety is frequently encountered not only in the child having asthma but also in his parents. Increasing anxiety on the part of one often increases the anxiety of the other.

Investigators formerly thought they knew why eosinophilia occurred. At the present time, no one is sure about its mechanism. It now appears that the human eosinophil is not particularly rich in histamine. The basophil in the blood and the mast cell in the tissue are known to contain the greatest quantity of histamine.^{7,8}

Mechanism of Acute Allergic Reaction

The mechanism of the acute allergic reaction in a sensitized person may be considered to consist of four parts, namely (1) the entrance of antigen into the body, (2) the antigen-antibody (reagin) reaction in or on the sensitized cell,

(3) the release of histamine and other chemical mediators and (4) the assault of these chemical mediators on the smooth muscle and blood vessels of the shock organs.

TABLE III. IMMEDIATE ALLERGIC REACTIONS: SOME SUBSTANCES RELEASED BY THE ANTIGEN-ANTIBODY REACTION

Substance	Dilates Small Vessels	Constricts Bronchi	Decreases Coagulability of Blood
Histamine	+	+	0
Acetylcholine	+	+	0
Serotonin (5-hydroxytryptamine)	Constricts	+	0
Slow-reacting substance	0	+	0
Heparin	0	0	+

All of the substances that are released and that act as chemical mediators of the acute reaction are not yet known; however, at least five have been recognized (Table III). Some species difference apparently occurs with regard to the importance of each of these chemical mediators. Histamine is of great importance in man,⁹ as is the slow-reacting substance.¹⁰ Considerable question exists regarding the importance of serotonin in the human reaction,¹¹ whereas this substance is important in the rat and other animals. Acetylcholine may be important in some of the allergic reactions of man.¹² Heparin is known to account for the change in the coagulability of the blood.¹³ The slow-reacting substance is probably more important in man than in any of the experimental animals. It has not yet been completely identified chemically. In addition to the substances mentioned, excessive amounts of potassium and adenosine also are probably released.

Management of Acute Asthma

The child having asthma is more effectively managed if one knows the pharmacologic action of each drug employed and which step of the acute allergic reaction is affected by the therapeutic measures used, which raises the question of how to block the afore-mentioned four steps of the acute allergic reaction. The first step can be blocked by using environmental control, which allows one to block the entrance into the body of all or a considerable portion of the antigen. A series of injections for hyposensitization partially blocks step 2. This form of treatment causes the child to produce blocking antibodies that interfere with the antigen-antibody (reagin) re-

action. Treatment cannot affect step 3, for release of the chemical mediators takes place immediately once the antigen-reagin reaction has occurred.

The fourth step can be influenced by the various forms of symptomatic treatment familiar to all physicians. The drugs presently used for the symptomatic treatment of asthma are little different from those in general use about ten years ago (Table IV). It is true that some new antihistaminic drugs now are available, as are the steroids and corticotropin (ACTH). The "old" drugs, however, are still extremely effective if properly used.

TABLE IV. CURRENTLY ACCEPTED MODES OF ACTION OF DRUGS COMMONLY USED IN ASTHMA

Drug	Action
Epinephrine	Reduces edema Diminishes bronchospasm
Ephedrine	Same as epinephrine but slower in action and effect more sustained
Isopropylarterenol	Is most potent bronchodilator now known
Theophylline group	Are bronchodilators by direct action on muscle
Iodides	Thin bronchial secretion
Antihistaminics	Antagonize union of histamine with site of action
ACTH and steroids	Incompletely known but at least: Interfere with metabolism of histamine May interfere with formation of antibody Have antiphlogistic action (probably most important)

Epinephrine remains the most important drug in the treatment of the acute asthmatic episode. Depending on the severity of the attack, it may be given subcutaneously in a 1:1000 aqueous solution or in a 1:100 solution by inhalation. A small dose of the 1:1000 aqueous solution, such as 0.1 to 0.2 ml., should be given subcutaneously and repeated at intervals of fifteen to twenty minutes for two or three doses rather than administering the entire dose at one time. Other chemically related drugs, such as isopropylarterenol, isoproterenol (isuprel) hydrochloride and isoproterenol (norisodrine) sulfate, also may be used by inhalation. Isopropylarterenol is usually well tolerated by children and is considered the most potent bronchodilator now available. If nebulized medicaments are to be used, both parent and child should practice the technique. Ephedrine and the

ephedrinelike drugs are of some value but their action is somewhat more delayed, although more prolonged. I consider that epinephrine in oil is too uncertain in action to warrant using it, although some physicians consider that it is an excellent preparation.

Theophylline may be given by suppository or orally, or the ethylenediamine salt (aminophylline) may be given intravenously, orally or by suppository. A frequently effective combination is to administer the suppository when the first injection of epinephrine is given. The effect of the suppository will begin to be evident at about the time the effect of the epinephrine is wearing off. Some physicians are of the opinion that the theophylline group of drugs are of little therapeutic value against asthma when given orally. A seriously ill child having asthma may be too ill to take or retain medicaments given by mouth. If oral medication is tolerated, I have found that the oral route often is satisfactory if the asthma is not severe. Caution must be exercised regarding overdosage with aminophylline.^{14,15} The slow and at times erratic absorption from the rectum should be remembered. If the drug is going to be effective in an acute attack of asthma, one or two doses will suffice. A suggested dose by rectum is 250 mg. for a child of ten years and 125 mg. for a child of two years. When the drug is used intravenously, a dose of 6 mg. per kilogram is adequate. The drug should be injected slowly and should be well diluted in a solution of dextrose.

Potassium iodide is an excellent expectorant but will not produce its effect immediately when given at the time of an acute allergic attack.

The antihistaminic drugs are of minimal value in the treatment of asthma. When given prophylactically before or immediately after exposure to a known etiologic agent, they are often of great benefit. If used early in the course of the attack, they also are of value. If the attack is well established, it is best to avoid their use.

The steroids and ACTH are of value in the treatment of patients who do not respond to the above regimen. In my opinion, these agents should not be used unless absolutely necessary. Their effect is not apparent for several hours, sometimes as long as twenty-four to forty-eight hours. Prednisone, prednisolone or triamcinolone (aristocort or kenacort) may be given orally. Cortisone, hydrocortisone or ACTH may be given

intramuscularly. If past experience has demonstrated the necessity of the use of one of the steroids to stop an attack, its administration is best given concomitantly with epinephrine, but not in the same syringe. Every child who has once required the use of steroids, however, will not always require their administration to stop a subsequent attack of asthma. When these agents are used, adequate doses should be given to secure a prompt therapeutic effect and then the drug should be withdrawn over a period of five to ten days.

It is important that an adequate intake of fluid be maintained, particularly in the child whose severe acute attack is prolonged. The fluid often must be given intravenously. Inhalation of oxygen sometimes is of help, although the relative freedom from dust and pollen in an oxygen tent may account for some of the improvement that patients obtain when so treated. A mixture of helium and oxygen administered by mask occasionally is of great benefit. On rare occasions, inspissated mucus may act as a foreign body and have to be removed bronchoscopically.

Management of Recurrent Asthma

Children having recurrent episodes of asthma are managed differently. The initial emphasis in such patients must be on a complete diagnostic study. This, of course, is equally important in the management of the child having acute asthma after the attack has subsided. Such an investigation is best done by a physician especially interested and trained in pediatric allergy. Regular care and management are best given either by him or by the physician in the home community (generalist or pediatrician) who best knows the child as a family physician. Close co-operation between the two physicians is essential.

Space does not permit more than some rather broad statements about management. Details of care vary from child to child. Environmental control is most important, as has been mentioned previously. House dust is a frequently noted etiologic agent. A "dust poor" bedroom can be established. When one advises this measure, be sure to see that the mother first dustproofs the bed and does a thorough and meticulous job.¹⁶

Infections may be etiologic factors, at least as cofactors. A complete examination should include careful study of the upper part of the respiratory tract, including culture of the naso-

pharynx. Culture of the sputum should be done if possible, although few children less than eight years of age can expectorate sufficiently well to provide a specimen.

Hyposensitization may be necessary but is more often of value for seasonal asthma. Hyposensitization to house dust is not recommended, for instance, unless a program of environmental control has been well carried out and has not succeeded completely in relieving the patient, or unless such a program is impossible.

Until the recurrent attacks are under control, the child should avoid exertion. He also should avoid sudden changes in temperature and exposure to dusty atmospheres. If attacks occur despite these measures, symptomatic treatment should be instituted at the very first sign that an attack is impending. The mother often will be able to tell anywhere from six to forty-eight hours in advance that an attack of asthma is going to occur. If the administration of potassium iodide, an antihistaminic drug, and ephedrine or an ephedrinelike drug is begun at this time, the asthmatic attack frequently can be averted. If infection appears to be playing a role, a properly chosen antibiotic should be administered at the same time.

Comment and Summary

A child having wheezing dyspnea (asthma) may be suffering from one of several conditions, although the most common cause is allergy. Knowledge concerning the mechanism of the immediate allergic reaction is constantly increasing, although much is still to be learned. Such knowledge allows the physician to treat a child having asthma on a much more rational basis.

Children whose asthmatic attacks are associated with infections should have the infection properly treated. Environmental control is an extremely important part of the management of the child having recurrent episodes of asthma; when such control is indicated, it should be carried out meticulously.

Most of the drugs now being used for symptomatic treatment are not new. The administration of steroids is not indicated unless use of other drugs has failed or unless one knows from previous episodes that these other agents always have failed. The steroids are not a substitute for other forms of treatment.

It is important to know the pharmacologic ac-

tion of the drugs commonly used in asthma. Drugs should be given for the purpose for which they were devised, in adequate dose and at the proper time.

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ing Joslin's definition the mortality ranges from 3 to 15 per cent.

To the patient "coma" is a fearful word, synonymous with deep unconsciousness and a state near death, despite the clinical modifications described above. It has been our practice to avoid the use of this word unless the patient is indeed virtually unconscious. Clinically, the terms "moderate," "severe," and "profound" ketoacidosis should be quite adequate to describe all types of so-called "diabetic coma" which are not characterized by unconsciousness in addition to other symptoms and signs of ketoacidosis.

Before attempting an analysis of the numerous metabolic disturbances involved in a given case of diabetic acidosis and/or coma, the therapist must immediately realize that lack of sufficient insulin is the common denominator of all these complexities. Underestimation of the insulin requirement has been the commonest source of error in treatment. A pardonable aspect of this error is the fact that we have no sure way of knowing the exact immediate need for insulin except by following the decline in concentration of glucose in the blood by serial determinations at frequent intervals (every one or two hours). The time-honored custom of assuming that all cases with similar initial blood glucose concentrations will require the same amount of insulin is exploded by the numerous instances of severe insulin resistance encountered. Classical among such cases is the patient of Boulin² who required 19,100 units of insulin intravenously over a period of sixteen hours to effect an adequate reduction of the blood sugar level. (It was a perfusion of insulin at the rate of 1,200 units per hour.) This saved the patient's life.

Rapid blood ketone determinations, as described by Duncan³ and by Guest,⁴ are not only reliable for the immediate recognition of the degree of ketosis present but also provide a dependable guidepost for assessing the degree of insulin resistance in a given patient. The method of Guest⁵ is as follows:

Acetest tablets (manufactured by Ames Chemical Company, Elkhart, Indiana) and a series of standard solutions of acetone must be available. When treated with drops of solutions containing acetone or acetoac-

tate (diacetic acid), these tablets develop colors ranging from pale yellowish-lavendar to deep purple.

Standard Solutions of Acetone.—Prepare a solution containing 100 mg. of acetone per 100 ml. by measuring acetone C.P. (sp. gr. 0.789, taken as sp. gr. 0.8) into a volumetric flask and diluting with distilled water: i.e., 0.5 ml. in 400 ml., or 2.5 ml. in 2 liters. Prepare ten dilute standards by delivering aliquots of this solution (1 cc.=1.0 mg.) from a burette into volumetric flasks (100 ml.) and dilute to volume to give concentrations 6, 9, 12, 15, 18, 24, 30, 45, 60, and 75 mg./100 cc.

Samples of serum or plasma are prepared in small quantities by any of the standard methods. Capillary hematocrit tubes, after centrifugation, can be cut with a file just above the packed cells and will yield drops of plasma adequate for testing ketone levels with the Acetest tablets.

Estimation of Ketones.—Arrange Acetest tablets in a row on a white card marked with figures to indicate the acetone standards to be used (less than ten tablets if the whole range is not needed) and a second row of tablets on another card, marked with pencil to indicate the dilutions of the blood filtrates to be tested. On each tablet in the row for standards place a single drop of the acetone solution indicated, and on each tablet on the other card a drop of the blood filtrate indicated. After two minutes, allowed for full development of the colors, compare and select the colors that most nearly match.

Calculation.—Concentration of acetone in the standard, expressed in equivalents of acetoacetate (column two or three in Table I) \times dilution of sample with matching color = concentration of acetoacetate (diacetic acid) in the sample.

The "acetone equivalent" values are based on the finding that acetoacetate gives a color with the sodium nitroprusside reagent 5.3 times stronger than the color given by equimolar amounts of pure acetone. The molecular weight of acetone is 58 and that of acetoacetic acid is 102. Therefore, the concentration of acetone in the standard \times the dilution of the filtrate with matching color divided by $5.3 \times 58/102$ = mg. of acetoacetate expressed as mg. of acetone per 100 ml.; or, divided by $5.3 \times 58/102 \times 102/10$ = mEq. of acetoacetate (anion) per liter of sample. The conversion of these equivalent values is indicated in Table I.

This table can be conveniently mounted under a glass or plastic plate and the tests then performed with the series of tablets placed in juxtaposition to the row of figures indicating the standard solutions, with a parallel row of tablets for tests of the "unknown" filtrates (Table I).

It is important to realize that blood and urinary ketone levels do not always bear a constant relationship to each other (i.e., not infrequently the blood ketones may be considerably elevated while

⁵The authors are grateful to Doctor George M. Guest for permission to describe this method which will be published in more detail in a forthcoming article by Doctor Guest.

DIABETIC KETOACIDOSIS AND COMA—HAUNZ AND CORNATZER

TABLE I. SAMPLE TABLE FOR RECORDING DATA
IN THE RAPID BLOOD KETONE METHOD OF GUEST

Standards				Samples	
Acetone standards mg. per 100 cc.	=	Acetoacetate (acetone) mg. per 100 cc.	(anion) mEq. per liter		Dilutions and name or number of blood filtrate, serum or freshly passed urine.
75		25	2.5	○	○
60		20	2.0	○	○
45		15	1.5	○	○
30		10	1.0	○	○
24		8	0.8	○	○
18		6	0.6	○	○
15		5	0.5	○	○
12		4	0.4	○	○
9		3	0.3	○	○
6		2	0.2	○	○
0		0	0	○	○

Place on each circle an Acetest Tablet (Ames Co.)

In the row for standards place on each a drop of the acetone solution indicated; in the other row, a drop of the sample.

Calculation: Concentration of acetone in standard expressed in equivalents of acetoacetate (in col. 2 or 3) × dilution of sample with matching color = concentration of acetoacetate in sample.

the urinary ketones may be relatively low in concentration especially in the presence of renal impairment while the contrary may be true in other situations, especially when renal output is efficient and rapid). In such instances the value of the method described by Guest in the management of diabetic coma is self-evident. Since the plasma ketone concentration closely parallels the degree of clinical ketoacidosis and/or coma, this method provides an excellent prognostic as well as therapeutic guide to patient evaluation. Levels of 1 to 2 mEq./liter represent mild ketosis. In extreme ketosis levels may reach 10 mEq./liter.

While the procedure of Guest is relatively simple and requires minimal technical skill, there might conceivably be situations in which even this method exceeds available facilities. Under such circumstances a very crude but reliable method of assessing blood ketone levels consists of placing a drop of whole blood on an Acetest tablet, allowing ten minutes for clotting to occur. The clot is then lifted off with a piece of paper or an applicator stick, and the surface of the tablet is observed for the presence of a purple color. This method will readily detect 25 mg. (2.5 mEq./liter) of diacetic acid per 100 ml. of whole blood, and with close

scrutiny smaller quantities can be detected. However, this can at best be considered only a qualitative test. The same may be said of placing a drop of undiluted serum or plasma on an Acetest tablet.

Although the diagnosis of diabetic ketoacidosis and/or coma is irrelevant to the subject of this treatise, some mention must be made of unfortunate errors which still occur in the distinction between so-called hypoglycemic coma and diabetic coma. The physician who is not certain as to which of these conditions has eventuated in the unconscious state of his patient should remember that *it is infinitely less hazardous to administer more glucose to a patient in diabetic coma than to give more insulin to a patient in insulin coma.* When there is a shadow of a doubt, discretion is obviously the better part of valor, and withholding insulin for thirty minutes pending a blood sugar report in such cases is not to be criticized.

We advise against abandonment of frequent blood sugar determinations; their obvious value is unquestioned in assessing response to insulin and guarding against dangerous hypoglycemic coma which can be easily precipitated by too intensive insulin therapy especially as ketosis diminishes.

Blood sugar determinations should be performed by a "true" blood sugar method^{5,6} such as the Somogyi-Nelson technique since low values may be masked by non-glucose reducing substances included in other methods such as the Folin-Wu technique.

TABLE II. BLOOD SUGAR LEVEL CORRELATED WITH INSULIN DOSE
(153 Coma Cases)

Admission Blood Sugar (mg. %)	Average Insulin Dose Needed First 3 Hours (units)
1300-1600 mg. %	800 units
1000-1300 mg. %	490 units
600-1000 mg. %	317 units
400-600 mg. %	224 units
200-400 mg. %	110 units
100-200 mg. %*	56 units

*Low values due to administration of insulin on way to hospital.
(From Joslin, E. P., Root, H. F., White, P., and Marble, A.:
Treatment of Diabetes Mellitus, Ed. 9. Philadelphia: Lea and
Febiger, 1952, p. 371.)

As a rule of thumb, Joslin¹ suggests a preliminary dose of 50 to 100 units of unmodified insulin. At least half of this should be given intravenously for its immediate effect. We have followed this initial dosage plan for all patients in whom it was considered too hazardous to delay insulinization long enough for a blood glucose report. If anything, this dosage estimate errs on the conservative side, but the latter is to be desired as prophylaxis against insulin shock. Not infrequently the subsequent blood sugar report discloses that a much higher initial insulin dosage was indicated. Table II shows an analysis of 153 coma cases in which Joslin correlated average insulin doses necessary during the first three hours with corresponding initial blood sugar values. This is purely an arbitrary analysis and could not be depended upon as a fool-proof guide to estimating initial insulin requirements in the specific patient.

If it is found in retrospect that from one-half to two-thirds of the total twenty-four hour requirement of insulin was given in the first three hours, the clinician has probably used excellent judgment in estimating the initial insulin dosage. Unfortunately this is simply a "hindsight" observation and serves no useful purpose in early management of the patient. The exigency of immediate large doses of insulin is to arrest polyuria and glycosuria which in turn prevents further dehydration and dangerous excretion of potassium. Such rapid treatment has as its prime objective the restoration of normal feeding as soon as possible.

Intravenous Therapy of Diabetic Ketoacidosis and Coma

The long controversial question of intravenous glucose therapy in diabetic coma is now virtually resolved. The vast majority of therapists now interdict the use of intravenous glucose before the blood sugar has approached normal levels through the exhibition of insulin for the following reasons:

1. Glucose prevents rehydration of cells already depleted by prolonged hyperglycemia. Indeed, it increases cellular dehydration, which may eventuate in renal shutdown.

2. It may accelerate the rate of potassium loss from the serum via increased diuresis. (Also, potassium enters the cells when glycogen is formed so that if glucose is given, and enough insulin injected to "cover" the glucose, the resultant excessive glycogen formed may presumably carry potassium into the cells with it, further depleting the serum potassium concentration.) Under these circumstances hypokalemia can be fatal. Root, Story, and Cortesi⁷ maintain that one of the three hazards in treatment of diabetic coma is the danger of inducing hypokalemia if glucose solution is given particularly during the full activity of insulin when the blood glucose level is falling rapidly.

3. In giving glucose early one disrupts the most reliable hallmark of insulin action—the response of the blood sugar observed in serial determinations.

4. Glucose already present in the blood can be just as efficiently utilized as injected glucose if enough insulin has been administered.

Correction of Electrolyte and Fluid Disturbances in Diabetic Acidosis and Coma

Newer concepts^{8,9} and refinements in laboratory techniques for the diagnosis and correction of serious electrolyte and fluid disturbances have made it incumbent upon the general practitioner to acquire a practical working knowledge of such parenteral therapy, notwithstanding the fact that more elaborate facilities such as the flame photometer are available only in larger medical centers. The objective of this commentary is to outline techniques of diagnosis and therapy which can be done in smaller communities with minimum facilities, but the latter presupposes access to determinations of the plasma carbon dioxide combining power, chlorides, and blood glucose.

If such minimum facilities are not available, the patient should be given emergency treatment and transported to the nearest medical center so equipped. The risk of transporting the patient is still considerably less than the risk of guesswork in fluid and electrolyte correction, not to mention that it would be inexcusable to guess at critical insulin requirements.

The correction of fluid and electrolyte imbalance in diabetic acidosis and coma is a problem best considered under four headings as follows:

1. Fluid volume deficit
2. Bicarbonate deficit ("primary alkali deficit")
3. Sodium deficit
4. Potassium deficit

The calculations to be described can also be applied to management of conditions other than diabetic ketoacidosis and coma, such as renal acidosis and diarrhea. However, in patients whose basic problem is one of vomiting with consequent loss of hydrochloric acid, only the calculations of volume should be used and *not* calculations of bicarbonate deficit. Obviously, these calculations cannot be used in cases of so-called respiratory acidosis and respiratory alkalosis. In the plan proposed, correction of sodium deficit is indirectly included in calculations of bicarbonate deficits. The correction of potassium deficit can be effected by use of the "rule of thumb" and evaluation of clinical and electrocardiographic observations (or more directly by the flame photometer when available).

Diagnosis of Fluid Volume Deficit.—This is simply a qualitative appraisal of dehydration effected by careful correlation of the history, (degree of thirst, vomiting, polyuria, diarrhea, et cetera), clinical appearance (edema, dry skin, soft eyeballs, parched tongue, tissue turgor, et cetera), and laboratory data. Urine specific gravity and, if facilities permit, urinary chlorides are helpful. (If the urine contains more than 5 gm. sodium chloride per liter, adequate extracellular fluid volume is present.) Blood constituents indicative of dehydration include a rise in blood urea nitrogen with normal creatinine and rising hematocrit. Weight of the patient when accurate is, of course, a valuable guide.

Calculation of Fluid Volume Deficit.—Analysis of the above data should lead to a reasonably accurate conclusion as to whether the degree of dehydration is "mild," "moderate," or "severe" which, in turn, are estimated as 4 per cent, 6 per cent, and 8 per cent of the body weight, respectively.¹⁰ The calculation of fluid volume deficit is thus effected as shown in Table III.

TABLE III. CALCULATION OF FLUID VOLUME DEFICIT

"Mild" dehydration deficit = 8% Body Weight (estimated).	
Weight lb. \times 0.018 =	..... liters
"Moderate" dehydration deficit = 10% Body Weight (estimated).	
Weight lb. \times 0.027 =	..... liters
"Severe" dehydration deficit = 15% Body Weight (estimated).	
Weight lb. \times 0.036 =	..... liters

Diagnosis of Bicarbonate Deficit (Carbon Dioxide Combining Power).—As stated previously, facilities for accurate determination of the carbon dioxide combining power of the blood are a prerequisite for proper evaluation of bicarbonate deficit. The result must be expressed as mEq./liter which is accomplished by simply dividing volumes per cent by 2.22. Twenty per cent of the patient's weight in kilograms is expressed as the extracellular fluid volume in liters.

Calculation of Bicarbonate Deficit in Extracellular Fluid Volume of the Patient.^{11,12}—The first step here is to determine the deficit of bicarbonate in the patient by simply subtracting the carbon dioxide combining power of the patient in mEq./liter from the normal value of 25 mEq./liter. This deficit in mEq./liter is then converted into the total mEq. deficiency of bicarbonate by simply multiplying the former by the extracellular fluid volume of the patient in liters. The amount of intravenous 1/6 molar sodium lactate required to correct this deficit is calculated by multiplying the total mEq. deficiency of bicarbonate in the extracellular fluid volume of the patient by 6, since each mEq. deficiency is equivalent to 6 cc. of 1/6 molar sodium lactate. This calculation will also indirectly correct the sodium ion deficiency. The carbon dioxide combining power should be repeated at least every four hours and oftener in difficult cases. Great care should be exercised not to "overshoot" the mark and induce dangerous alkalosis! Calculations of bicarbonate deficit and correction of the deficiency are summarized in Table IV.

Diagnosis of Plasma Potassium Deficit.—Hy-

hypokalemia is detected most rapidly and accurately by the flame photometer. If this instrument is not accessible, the clinician is obliged to rely upon the well-known electrocardiographic findings (lowering and broadening of T waves, lengthened Q-T interval, increased U wave, de-

kalemia, should calculations be inaccurate, it should always be given orally when the patient is able to swallow and is not vomiting. A stomach tube may overcome the latter difficulty. We have not seen hyperkalemia induced by oral* administration of potassium salts. By the par-

TABLE IV. CALCULATION OF BICARBONATE DEFICIT

A. Normal CO ₂ combining power (50 Vol. %)	=	25 mEq./liter
B. Patient's CO ₂ combining power Vol. %		
C. Conversion Vol. % × 0.45	=	..... mEq./liter
D. Deficit (line C from Line A)	=	..... mEq./liter
Extracellular fluid volume		
E. Weight of patient lbs. × 0.09	=	..... liters
F. Patient's TOTAL bicarbonate deficit	=	..... mEq. deficit
..... line D × line E		
Volume of 1/6 M Sod. Lactate required		<input type="checkbox"/> cc.
..... line F × 6		

TABLE V. CALCULATION OF PLASMA POTASSIUM DEFICIT

A. Normal plasma K	5	mEq./liter
B. Patient's plasma K	.....	mEq./liter
C. Deficit (A minus B)	.....	mEq./liter
Patient's extracellular fluid volume		
D. Weight	lbs. × 0.09	= liters
Patient's total potassium deficit (extracellular)		= mEq.
E.	line C × line D	
(Note: 0.6% KCl in 0.45% NaCl = 80 mEq. K/l)		
Dose of 0.6% KCl:	divided by 80	<input type="checkbox"/> liters
.....	line E	

(Dictum: Always replace potassium orally when feasible.)

pressed S-T segment) and clinical signs which are reversible with correction of the deficit. The clinician should beware of too implicit acceptance of electrocardiographic evidence of hypokalemia since this pattern is mimicked by numerous other conditions among which are cardiac disease, hypertension, shock, certain drugs, and pulmonary embolism. A singular handicap is the absence of a "base line" electrocardiogram taken perchance prior to the patient's illness. The danger of hypokalemia is most imminent when insulin action is maximal, especially if excessive parenteral glucose is administered to offset a rapid decline in the blood sugar level. As mentioned previously, excessive glucose administered, coupled with accelerated anabolic processes of glycogenesis, causes a rapid shift of potassium from the plasma into the cells. Potassium depletion is further enhanced by dilution of the extracellular compartment and by direct loss incident to increased diuresis. Since parenteral potassium therapy is a delicate problem fraught with the danger of inducing hyper-

enteral route, one should always err on the conservative side in estimating dosage, especially when flame photometer estimations are not available.

Calculation of Plasma Potassium Deficit.—Once the diagnosis of hypokalemia is suspected or established serum potassium determinations constitute the only really safe method of estimating parenteral replacement therapy.¹³ The actual deficit is estimated by subtracting the patient's serum potassium value from the normal of 5 mEq./liter. The total potassium deficit is then calculated by simply multiplying the deficit (in mEq./liter) by the patient's extracellular fluid volume in liters. The result is expressed in milliequivalents. Parenteral therapy can be effectively administered as a solution of 0.6 per cent potassium chloride in 0.45 per cent sodium chloride,

*An excellent preparation for oral administration of potassium is Liquid Potassium Triplex (Eli Lilly and Company) given in doses of one dram every three or four hours until the hazard of hypokalemia is eliminated.

containing 80 mEq. of potassium per liter. The actual dosage of this solution required is estimated by dividing the patient's total potassium deficit (extracellular) in mEq. by 80. The result is expressed in liters or fractions thereof (Table V).

An alternate parenteral solution can be prepared as follows:

The quantity of potassium needed can be added to one liter of 0.9 per cent saline (one gram of potassium chloride contains 13.4 mEq. of potassium). *It should not be overlooked that potassium cannot be administered by syringe and must be dissolved in a minimum of 500 to 1,000 ml. of suitable intravenous solution before administration.*

The "Diabetic Coma Chart"

Many years ago the sage Doctor Russell Wilder emphasized the importance of devising a chart to record in organized detail the many events which transpire concurrently in diabetic ketoacidosis and/or coma. The busy physician must have quick and complete insight into these data from hour to hour and day to day until the patient is completely out of danger. Nothing is more confusing than a bulky hospital chart with laboratory tests, insulin dosage, fluid balance, electrolyte replacement therapy, et cetera, scattered in helter-skelter fashion. The physician can easily devise his own "coma chart," but the modification of Wilder's original coma chart is proposed for those who may wish to use it (see chart).

Summary

An attempt has been made to outline a practicable approach to the therapy of diabetic ketoacidosis and/or coma within the limited facilities of the general practitioner. Obviously this vast and controversial subject cannot be comprehensively presented in this short treatise. Certain basic fundamentals of good medical and nursing care are omitted in the interest of brevity and because such information is readily available in standard textbooks.

Lack of sufficient insulin is the common denominator of the numerous metabolic complexities of diabetic acidosis and coma. Probably the commonest source of error in treatment is underestimation of immediate insulin requirement. Sug-

gestions are proposed to avoid or minimize this error.

A simplified approach to the correction of profound electrolyte disturbances incident to diabetic ketoacidosis and/or coma has been proposed which should avoid the grave hazards of miscalculation when administering parenteral fluid and electrolytes to correct deficits in fluid volume, alkali reserve, sodium, and potassium. The calculations presuppose access to determinations of plasma carbon dioxide combining power, chlorides, and blood glucose. When such minimum facilities are not available, the physician should restrict treatment to emergency measures and transport the patient to the nearest medical center so equipped. To attempt therapy with inadequate facilities is foolhardy heroism which courts disaster, since diabetic coma remains a grave medical emergency with a mortality ranging from 3 to 15 per cent or higher depending upon the clinician's definition of diabetic coma.

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Surgical Management of Repeated Late Abortions

- Repeated late abortion is a distinct clinical entity accompanied, in many instances, by cervical weakness. Surgical intervention, using a modified Shirodkar operation, is described here—with evidence that the prophylactic operation is to be preferred to the therapeutic procedure.

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ABORTION WASTAGE has been variously estimated from ten¹ to forty-nine² per cent of all pregnancies. Other than the frequent findings of pathologic ova as reported by Rock and Hertig,³ explanation for most of these losses remains obscure. Notwithstanding countless efforts of clinical investigation and therapy, prevention and treatment remains largely empiric. Results are often disappointing and the success of one or more therapeutic measures is open to question.

Our interest, however, is not with the therapeutic problem of early abortion, which, like King,⁴ we regard as rather futile. Rather, our attention is directed to repeated losses occurring after the first trimester, and their operative prevention. Unlike early abortion, the fetus in the second trimester abortion is usually normally formed; and, following its expulsion, may live for a short period of time. In these cases it is apparent that the problem is usually one of either insecure attachment of the placenta or inability of the cervix to hold the pregnancy secure. Thus, at this late stage, where abortion occurs without appreciable bleeding and where other pathologic causes are excluded, the incompetent cervix may be regarded as the evident cause.

Lash and Lash⁵ were the first to draw attention to the finding of an incompetent internal cervical os as a contributing cause. Clinical and radiological evidence supports their contention. They and several others^{1,4,6-8} attribute this cervical weakness

in practically all cases to previous trauma. While the cervical defect may be essentially an anterior one, Shirodkar⁹ as well as Greene-Armytage and Browne¹⁰ regard the deficiency as one of a more general nature, or as a specific defect located elsewhere. In a series of cases just published, Picot and associates¹¹ found no evidence of antecedent cervical trauma.

Surgical correction may be performed before conception or during pregnancy. If an anterior defect can be demonstrated beforehand, its excision and repair, as advocated by Lash and Lash,⁵ becomes a relatively simple matter. Where this is not the case, a therapeutic operation, as developed by Shirodkar,⁹ may be performed during pregnancy when the cervix is found partially dilated and the membranes bulging. As originally described, he closed the cervix in purse-string fashion employing three double strands of No. 2 chromic catgut. Independently, Ian McDonald⁷ of Melbourne developed a similar technique of suture closure also as a therapeutic operation. Live births with survival were obtained in 43 per cent of his patients. Barter, Dusbabeck, Riva and Parks¹² earlier this year reported a series of twenty-two cases with fourteen successes. Durfee⁸ subsequently published a series of twenty-four patients with fetal salvage in seventeen cases. Neither report indicates how many had therapeutic, or prophylactic, operations. While homologous fascia from the thigh was originally employed, preference of both is now for the use of non-absorbable suture material. Where there is a history of repeated late abortion, Greene-Armytage and Browne¹⁰ of London prefer to do a modified Shirodkar operation

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as a prophylactic procedure in early pregnancy, or even before conception. Similarly, it is our belief that better results can be obtained if the operation is carried out in pregnancy prior to the

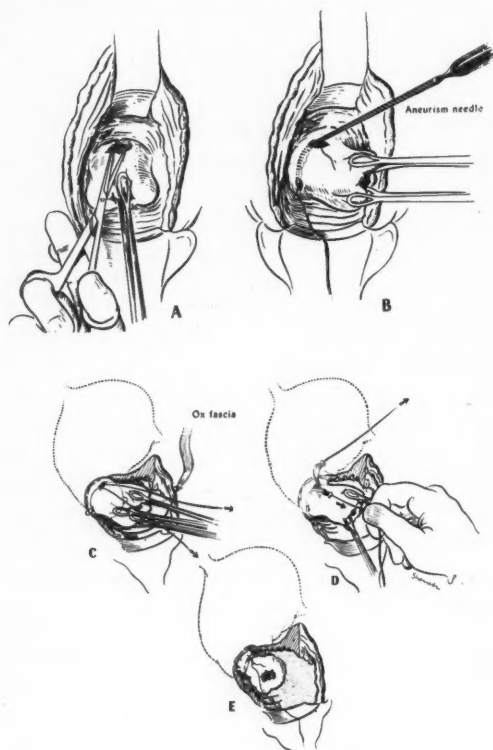


Fig. 1. Modified Shirodkar operation

time of anticipated late abortion. In order to avoid the possible retention of an early defective abortus, it is our practice to defer the operation until after the sixteenth week of pregnancy.

Surgical Management

The patient is prepared for vaginal plastic surgery in the usual manner except that the preoperative enema is omitted. Four hundred milligrams of progesterone is administered intramuscularly as a prophylactic measure. The operation is performed under general anesthesia. Good exposure is obtained with the help of several deep vaginal retractors.

The anterior lip of the cervix is grasped by a sponge forceps and drawn down. The anterior vaginal wall mucosa is incised transversely with Mayo scissors just below the level of the bladder attachment (Fig. 1A). Thereafter the bladder is

dissected upward by blunt dissection. Next the posterior lip of the cervix is similarly grasped and elevated. A like incision is made in the mucosa at 6 o'clock position. Then, at the level of the internal cervical os, the submucosa is circularly tunneled by curved aneurysm needle. It is introduced at the 12 o'clock position and in counter-clockwise fashion advanced around the cervix. In some of our cases additional incisions were necessitated at 9 and 3 o'clock positions (Fig. 1B). Black silk suture carried through this artificial tunnel by the aneurysm needle is transfixed and tied to a strip of ox fascia (Fig. 1C). In turn, the fascia is drawn up through the channels from below such that ultimately both free ends protrude through the original 12 o'clock incision (Fig. 1D). Finally, the ox fascia is drawn taut and securely tied, anteriorly, in purse-string fashion at the level of the internal os. As recommended by Barter,¹² the knot is anchored to the cervix anteriorly and the fascia also transfixed to the cervix posteriorly with fine black silk. Anterior and posterior mucosal defects are then closed with continuous 000 chromic catgut (Fig. 1E).

Postoperative care of the prophylactic operation is simple. Antibiotics and massive doses of progesterone are continued for three or four days. Unlike the prolonged bed rest usually advocated following the therapeutic operation, our patients are allowed up on the second or third day and discharged by the tenth day. The patient is advised thereafter to avoid strenuous activity and refrain from coitus.

Case Reports

Case 1.—Mrs. P. S., aged twenty-seven, para 0 gravida 3, gave history of previous spontaneous abortions at twenty-two weeks and twenty weeks. There had been no antecedent surgery or trauma to the cervix. A prophylactic modified Shirodkar operation was performed on January 29, 1957, at eighteen weeks' gestation. Postoperative course was afebrile and uneventful. Elective Cesarean section was performed at thirty-eight weeks with delivery of a 5 pound 8 ounce infant which survived.

A second pregnancy has followed. Frequent examinations revealed good competence of the cervix and, accordingly, the Shirodkar operation was not repeated. Labor began spontaneously early in the morning of the day of scheduled repeat Cesarean section (September 5, 1958). Vaginal delivery of a 6 pound 6 ounce living female infant followed an uneventful labor of two hours.

Case 2.—Mrs. J. E., aged twenty-two, gravida 4 with no living children, lost her first pregnancy at fifteen weeks and her second at twenty-three weeks. At twenty-

two weeks' gestation during the third pregnancy, the cervix was found 3-4 centimeters dilated with membranes bulging and fluid leaking. Despite progesterone therapy and bed rest, a deadborn macerated fetus was delivered one month thereafter. On March 2, 1957, at twenty weeks' gestation, a prophylactic modified Shirodkar operation was performed without complication. Premature labor began at thirty-two weeks resulting in breech delivery per vaginam of a 3 pound 8 ounce female infant which survived. Palpation of the cervix revealed no evidence of the fascia or cervical abnormality.

Mrs. E. is again pregnant with last menstrual period April 18 of this year. Repeated examinations of the cervix revealed good competence until the twentieth week. Associated with symptoms of watery vaginal discharge (which we regard as highly significant) and pelvic pressure, the cervix was found 2 centimeters dilated with membranes intact. A therapeutic Shirodkar operation was performed forthwith. The cervix has since remained closed. She is now twenty-three weeks pregnant.

Case 3.—Mrs. R. A., aged thirty-one, gravida 5, had a spontaneous delivery at thirty-six weeks in 1949 with survival of the infant. The succeeding three pregnancies terminated spontaneously at twenty-eight, fifteen, and twenty-eight weeks respectively with no survivals. On July 1, 1957, at twenty-five weeks, a modified Shirodkar operation was carried out prophylactically. Other than the development of mild preeclampsia, the balance of her pregnancy remained uncomplicated. Labor occurred spontaneously at thirty-eight weeks, was of 5 hours' duration, and resulted in the vaginal delivery of a 3 pound 12 ounce infant that survived. The cervix was noted to regain firm tone and contract down particularly rapidly following the second stage making delivery of the placenta rather difficult. No defect in the cervix was palpated.

Case 4.—Mrs. H. B., aged forty-two, para 0 gravida 3, lost her first pregnancy at sixteen weeks. The following year she aborted at twenty-two weeks. There was no history of antecedent trauma or surgery. Following an uncomplicated pregnancy of twenty weeks, a prophylactic modified Shirodkar operation was carried out on January 10, 1958.

The pregnancy continued uneventfully until the development of premature labor at 34 weeks. A 5 pound 8 ounce male infant was delivered per vaginam without difficulty following a 4 hour 28 minute labor. Unfortunately, the newborn exhibited characteristic mongolism and lived for only 7 days. Examination of the cervix following delivery revealed no unusual patency.

Case 5.—Mrs. L. S., aged thirty-three, para 1 gravida 6, delivered spontaneously a living female at thirty-seven weeks in 1950. Thereafter she had successive late abortions at: twenty weeks, sixteen weeks, twenty-four weeks, and twenty weeks. None was otherwise complicated and there had been no intervening surgery or trauma. On January 14, 1958, at twenty-one weeks' gesta-

tion, a prophylactic modified Shirodkar operation was performed without complications. Her subsequent course was uneventful.

Labor began spontaneously at thirty-eight weeks. An 8-pound female infant which survived, delivered per vaginam after a labor of three hours and thirty-six minutes. Examination of the cervix immediately thereafter revealed a flabby consistency. However, good circular tonus of the internal os was regained within ten minutes.

Case 6.—Mrs. P. W., aged twenty-five, para 0 gravida 3, lost her first pregnancy at twenty-seven weeks and her second pregnancy at twenty-five weeks. A previous dilatation and curettage was performed for intermenstrual spotting. Accordingly, when the present pregnancy reached twenty weeks, a prophylactic modified Shirodkar operation was carried out. Induction at forty weeks resulted in vaginal delivery of a 7 pound 8 ounce surviving male infant. Labor was of three hours' and fifteen minutes' duration. Examination immediately thereafter disclosed no laceration of the cervix or palpable fascia.

Case 7.—Mrs. D. S., aged thirty-one, para 0 gravida 5, lost three successive pregnancies at twenty-two weeks, and her fourth aborted at nineteen weeks. There had been no previous surgery or trauma. A modified Shirodkar operation was performed during her recent pregnancy at seventeen weeks when the cervix was found 2 centimeters dilated and partially effaced. Three weeks thereafter examination again disclosed the cervix 2 centimeters dilated, but with membranes still intact. An immediate repeat operation was performed closing the cervix below the bulging membranes. During the course of the operation the torn fascia previously employed was found and was accordingly removed. Continence was again obtained, this time for about six weeks. Unfortunately, premature labor began at twenty-six weeks. The patient delivered a 2 pound 4 ounce boy that lived only three hours.

Case 8.—Mrs. V. B., aged thirty-seven, para 1, gravida 4, lost her first two pregnancies at fifteen and twenty weeks. Her last pregnancy resulted in a full-term delivery of a living male infant. Examination at eighteen weeks of the present pregnancy found the cervix 3 centimeters dilated with bulging membranes. Therapeutic Shirodkar operation held the pregnancy for three weeks until premature separation of the placenta caused intrauterine death and resulted in late abortion. The cervical os contracted down well immediately thereafter.

Case 9.—Mrs. H. N., aged twenty-nine, para 0 gravida 6, lost her first pregnancy at twenty weeks. Four successive losses occurred at three months, each with an apparently normal fetus. Her last abortion at eight weeks appeared to be due to defective products of conception. Five of these were followed by dilatation and curettage operations. Roentgenographic studies revealed a bicornuate fundus and incompetent cervix. A No. 5 Hegar dilator could be passed without resistance or sensation of pain. Accordingly, combined uterine unifi-

cation and Shirodkar operation were performed as a prophylactic measure. Recovery was uneventful. The patient has not yet become pregnant, but interestingly, complains of dysmenorrhea with each of her subsequent menstrual periods.

Case 10.—Mrs. H. P., aged thirty-seven, para 1 gravida 6, had two early abortions followed by dilatation and curettage operations. Her third pregnancy was lost at five months, presumably caused by a low submucous myoma. Myomectomy was subsequently performed and the next pregnancy went to thirty-eight weeks with rapid vaginal delivery of a surviving female infant. Her last pregnancy again aborted at twenty-five weeks, without explanation. Shirodkar operation was consequently planned and performed at twenty weeks of her present pregnancy. Mrs. P. is now thirty-six weeks pregnant.

Case 11.—Mrs. C. B., aged thirty-two, para 1 gravida 5, had one full-term pregnancy with surviving infant. Subsequent losses have occurred at fourteen, twenty-eight, and twenty-eight weeks. Her present pregnancy remained uncomplicated until at eighteen weeks the cervix was found partially effaced with beginning dilatation. A therapeutic operation closed the cervix. She is now pregnant and is in her twenty-third week.

Discussion

Our patients were selected on the basis of their unfavorable past obstetric records and/or findings of partial dilatation of the cervix. Where the operation was performed on a prophylactic basis, only those cases were selected where there was history of at least two or more repeated losses as either late abortions or early premature deliveries, without intervening viable births. It may be argued that without control cases, successful results of this surgery are not entirely convincing. In defense of our belief, however, we contend that in effect our patients' past histories serve as their own controls. We have had only limited experience with radiographic studies in the non-pregnant patient with history of late abortion, but find as have Rubovits and associates,⁶ a demonstrable defect in the internal cervical os.

The etiology of the incompetent cervix remains obscure. We were unable to find history of trauma to the cervix in several of our cases. A previous spontaneous delivery occurred in each of five cases. A dilatation and curettage was performed in four other patients. Thus we feel, in contradiction to the opinion of Lash and others, that the etiology need not be antecedent trauma. Quite possibly many cases of cervical incompetence may be of congenital nature. In support of this contention, that trauma need not be responsible for cervical

weakness and late abortion, were the findings of Finn¹³ in a study of 611 pregnancies following 390 vaginal operations. The majority had minor or major operations including the cervix, yet he found "The incidence of abortion and premature labor was not higher than the clinic average."

Our patients have, with two exceptions, carried their pregnancies to the births of viable infants or are still pregnant; one of the failures may be attributed to premature separation of the placenta. Two women have again become pregnant; one recently delivered per vaginam at thirty-eight weeks (after previous Cesarean section); the other developed partial cervical dilatation at twenty weeks necessitating a repeat operation. Our success with this small number of cases may be attributed to several factors, most important of which is the prophylactic application of the operation. We are firmly convinced that the elective performance of the operation will be much more rewarding, and can be better conducted, than when surgery is delayed until the so-often-silent processes of labor have already begun. General anesthesia, adequate exposure and gentle handling of tissues are also regarded as contributing factors to successful outcome. On the bases of experimental work of Csapo¹⁴ on pregnant rabbits, we have routinely employed massive dosages of progesterone before and after surgery. Since we have no controls, we can only presume such hormone therapy to be effective prophylaxis against uterine contractions at this critical time. Substantiating this belief, Hodgkinson and associates¹⁵ have recently published a report of their clinical experience with high potency progesterone in threatened abortion. They attribute an increase in salvage rate in part to this hormonal inhibition of myometrial contractions.

The technique employed is a modification of the Shirodkar operation and is substantially the same as that recommended by Douglas and Stromme¹⁶ in "Operative Obstetrics." We have used ox fascia, however, in preference to non-absorbable material such as polyethylene tubing. While superior to conventional suture material which may cut through the cervix, polyethylene tubing is not ideal because of its tendency to slip. Ox fascia possesses equal strength and has the advantage of staying secure as a flat band about the cervix. In time it is believed to be replaced by fibrous connective tissue derived from the cervix. In no case has there been a postoperative febrile

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course suggesting irritative reaction to the fascia. We have had no experience with dacron mesh as proposed by Dusbabeck,¹⁷ but believe it has the same disadvantage of necessitating Cesarean delivery, as do other non-absorbable bands.

patient was likewise initially prepared for Cesarean section; however, premature vaginal delivery occurred at thirty-two weeks with infant survival. During the present pregnancy the cervix maintained its security until the twentieth week. A

TABLE I. SUMMARY OF ELEVEN PATIENTS (TWELVE PREGNANCIES) FOLLOWING MODIFIED SHIRODKAR OPERATION

	Case	Age	Gravida	Living Children	Termination Prev. Preg. in Wks.	Shirodkar Op. (Wks.)	Results
1.	P.S.	27	3	0	22, 20	18(Px)	C.S. F., 38 wks. ('57) Vag. del. F., 38 wks. ('58)
2.	J.E.	22	4	0	15, 23, 22 (27)	20(Px) 20(Rx)	Vag. del. F., 32 wks. ('57) Preg. at 23 wks. ('58) Vag. del. M., 38 wks.
3.	R.A.	31	5	1	36, 28, 15, 28	25(Px)	Vag. del. M., 34 wks. Mongol (died)
4.	H.B.	42	3	0	16, 22	20(Px)	Vag. del. F., 38 wks.
5.	L.S.	33	6	1	37, 20, 16, 24, 20	21(Px)	Vag. del. M., 40 wks.
6.	P.W.	25	3	0	27, 25	20(Px)	Vag. del. M., 26 wks. (died)
7.	D.S.	31	5	0	22, 22, 22, 19	17(Rx), 19(Rx)	Aborted 21 wks.
8.	V.B.	37	4	1	15, 20, 40	18(Rx)	Not preg.
9.	H.N.	29	6	0	20, 12, 12, 12, 8	Px	Preg. 36 wks.
10.	H.P.	37	6	1	8, 8, 20, 38, 25	20(Px)	Preg. 23 wks.
11.	C.B.	32	5	1	40, 14, 28, 28	18(Rx)	

We are as yet uncertain regarding the best method for delivery, but feel that cases should be individualized. We believe that the patient should have the benefit of trial labor. If the cervix dilates reasonably well in early labor then vaginal delivery may be expected. Otherwise, Cesarean section should be performed with suitable antibiotic prophylaxis. We doubt that it is feasible to identify and cut the circular fascia at such time when absorbable material has been employed. At any rate, it has not been necessary in the present series of cases. Postpartum examination in several instances suggests that the cervix will regain satisfactory circular tonus. Division of the ring is possible, of course, if inert material such as polyethylene tubing or dacron mesh are used. Yet by so-doing, the competence of the internal os presumably has been weakened again for future pregnancies. For such reasons, the Washington group¹² and Durfee,⁸ who now prefer non-absorbable material, recommend Cesarean section.

Rubovits and associates⁶ report two patients where more than one baby was delivered vaginally following the Lash procedure without destroying the successful repair. Our experience with subsequent pregnancies is also limited to two patients. The first case was terminated by elective Cesarean section at thirty-eight weeks. During the next pregnancy, the cervix was frequently examined and, because the competence was maintained, a repeat Shirodkar operation was not performed. Although a Cesarean section was again planned, labor supervened at thirty-eight weeks and was followed by an easy vaginal delivery. Our second

repeat Shirodkar operation was done promptly when the cervix was found 2 centimeters dilated. The patient is now twenty-three weeks pregnant.

Until more experience has been gained with postpartum studies and repeat pregnancies, we cannot state that our modification of the Shirodkar operation obtains a more or less permanently competent cervix. Our second case would seem to refute this belief. However, we do not contemplate abandoning the use of absorbable suture material and/or the policy of allowing vaginal delivery.

Summary

1. Repeated late abortion is a distinct clinical entity frequently due to incompetent cervix. The cause in many cases remains obscure.

2. Repair of the cervical weakness is feasible and practical in pregnancy. A modified Shirodkar technique is described employing ox fascia.

3. A report is given of twelve pregnancies following modified Shirodkar operation between the seventeenth and twenty-fifth weeks of gestation. These have resulted in: seven viable births (six vaginal), and two failures—one associated with premature separation of the placenta. Three patients are still pregnant from three to sixteen weeks since surgery. One additional prophylactic operation was performed on a non-pregnant patient who had experienced habitual abortion attributed to incompetent cervix.

4. We regard the prophylactic operation as much preferred to the therapeutic procedure.

(References are on Page 855)

Intestinal Polyposis and Mucocutaneous Pigmentation (Peutz-Jeghers Syndrome)

Further Comments and Report of an Additional Case

● Peutz-Jeghers syndrome has left the realm of medical curiosities to become a well-recognized entity. As evidence of this, the authors have collected data in 117 cases. This syndrome consists of mucocutaneous pigmentation associated with intestinal polyposis. The authors maintain that the polyps in this syndrome are benign, whereas other observers claim that many of them are potentially malignant. The reader is invited to peruse the evidence and decide for himself.

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IN THE past few years the medical profession has become increasingly aware of the significance of mucocutaneous pigmentation, particularly in its relationship to intestinal polyposis. A previous report¹ from the Mayo Clinic discussed six new cases and attempted to correlate the data obtained from a comprehensive review of the sixty-nine cases reported in the literature through 1955. In this same report a new concept was proposed to explain the pathologic aspects of these unique gastrointestinal polyps.

Currently, a sufficient number of new cases have been documented to justify further reflections on some of the unusual aspects of this dis-

ease. Dissension continues to center primarily around the question of the potentially malignant character of the polyps. Our major purpose at this time is to report one additional case of this syndrome and to indicate, again, the apparent benignancy of the gastrointestinal polyps.

Report of Case

A white man, aged eighty-two, was seen at the Mayo Clinic in November, 1956, because of complaints of nausea, vomiting and difficulty in passing urine. He had had symptoms suggestive of urinary retention and these had been slowly becoming more severe in the previous five years. Two weeks prior to admission he began to pass urine every fifteen to thirty minutes and to have some overflow incontinence. The day prior to hospitalization he became somewhat confused and had dyspnea, nausea and vomiting.

Physical examination was difficult because the patient co-operated very poorly. The blood pressure was

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200 mm. of mercury systolic and 90 mm. diastolic. The prostate was moderately enlarged but felt benign. A large soft suprapubic mass extended to the level of the umbilicus. An indwelling catheter was

in the descending colon. The examiner's awareness of this syndrome led to search for and the demonstration of the characteristic pigment on the mucosa of the lips. This patient had been seen at the clinic in



Fig. 1. Gastric polyp composed predominantly of mucous cells. A few parietal (acid) cells are present in the upper right portion. Note the bands of smooth muscle in the lower portion of the picture (hematoxylin and eosin; x100).

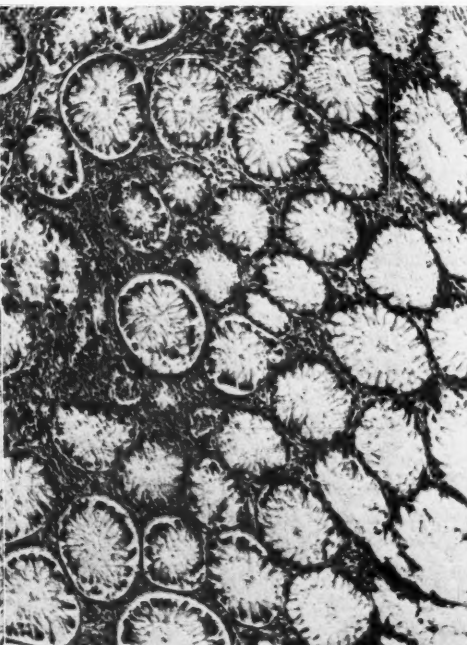


Fig. 2. Colonic polyp showing regularly arranged glandular structures composed of mucus-producing cells with small, basally oriented nuclei (hematoxylin and eosin; x100).

inserted into the bladder and in a period of two hours 4,100 ml. of urine was evacuated.

The concentration of hemoglobin in the blood, the prothrombin time, the results of the Kline flocculation test for syphilis, and the x-ray appearance of the region of the kidney, ureter and bladder were normal. Analysis of the urine demonstrated gross hematuria along with albuminuria, grade 3. The urea measured 194 mg. per 100 ml. of blood.

On the third day in the hospital the patient had severe oppressive substernal pain. An electrocardiogram taken a short time later showed the typical findings of acute anteroapical myocardial infarction. Six hours after the onset of pain the patient suddenly died.

The chief postmortem findings were coronary sclerosis, a recent infarct in the apex and anterior wall of the left ventricle with rupture of the myocardium into the pericardium, benign prostatic hypertrophy and bilateral hydronephrosis. An incidental finding was that of a single polyp 1 cm. in diameter in the fundus of the stomach and six polyps that varied in diameter up to 0.5 cm. in the colon. Three of the latter polyps were in the ascending, two in the transverse, and one

in the descending colon. The examiner's awareness of this syndrome led to search for and the demonstration of the characteristic pigment on the mucosa of the lips. This patient had been seen at the clinic in 1924 at the age of fifty years, complaining of nervousness and lifelong constipation. The record of a complete physical examination made at that time, including examination by a dermatologist, did not mention the presence of the pigmentation, although it mentioned that the lips were specifically studied. Also at that time x-ray examination of the stomach did not reveal any polyps, and gastric analysis showed 44 clinical units of total acids and 24 units of free hydrochloric acid.

Microscopically, all the polyps were benign. The gastric polyp contained a few strands of smooth muscle extending up into its core (Fig. 1). It was composed chiefly of irregularly arranged glandular spaces lined for the most part by mucus-producing cells. A few nests of parietal (acid-producing) cells were present in the polyps. The colonic polyps were composed of columnar mucus-producing cells (Fig. 2).

Review of Literature

In a previous report,¹ seventy-five cases of this syndrome were reviewed. In the two years subsequent to the period covered by that report, forty-

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two more cases²⁻¹⁹ including the present case have come to our attention, bringing the total to 117. It is now apparent that this syndrome has left the realm of a medical curiosity and is rapidly becoming a well-recognized clinical entity.

Sex and Age Distribution.—In the forty-two recent cases there were twenty-five females and seventeen males, and in the entire 117 cases there were sixty-three females to fifty-four males; thus the condition has been reported somewhat more often in females. The age at the time of diagnosis in the forty-two cases varied from four to eighty-two years with an average age of twenty-nine years. This age range differs only slightly from the previously reported range of two to seventy-seven years; in contrast, the average age of 22.5 years differs appreciably from the previously reported average.

Site of Pigmentation.—The pigment was present on the lips of forty-one of the forty-two cases, and in 115 of the 117 cases (98 per cent), thus making this the single most important physical sign. It was noted on the buccal mucosa in thirty-four of the forty-two cases, and in 103 of the 117 cases (88 per cent); hence pigmentation of the buccal mucosa was the second most reliable physical sign. A peculiar freckling was noted on the extremities in seventeen of the forty-two cases, and in forty-one of the 117 cases (36 per cent). The other, less common sites of pigmentation, namely around the other facial orifices, were affected in twenty-four of the forty-two cases. Again it can be stated that the pigment was noted most often early in childhood; the lip pigmentation tended to fade, but the buccal mucosal pigment remained relatively unchanged. The apparently occasional development of the pigment later in life is exemplified by the present case. An unusual site for the pigment, the rectal mucosa, was noted in one case.¹⁴

Racial and Familial Incidence.—No particular race appears to be predisposed to or immune to this disease. To the growing list of ethnic groups now can be added the German, Japanese, Hungarian and Swiss. The number of apparently sporadic cases continues to rise in proportion to the number of familial cases so that in only fifty of 117 cases (43 per cent) is there a history of relatives with both the pigment and the polyps. In another fifteen cases (13 per cent) there are

relatives with the pigment alone. In forty cases (34 per cent) the authors were unable to find any familial evidence of the disease. In the remaining twelve cases (10 per cent) no mention is made of a family history of the disease.

TABLE I. LOCATION OF GASTROINTESTINAL POLYPS IN PEUTZ-JEGHERS SYNDROME* (117 Cases)

	Cases	Per Cent
Jejunum	76	65
Ileum	60	51
Duodenum	17	15
Small intestine†	13	11
Colon	42	36
Rectum	42	36
Stomach	27	23
Appendix	3	3

*All but nine of 117 patients had polyps in the small bowel.

†Description not adequate for more precise localization.

Site of Polyps.—The polyps have been present in some part of the small intestine in 108 of the 117 cases, an incidence of 92 per cent. The exceptions include seven patients with polyps in the rectum alone, one with polyps in the colon and stomach, and one with polyps in the rectum, colon and stomach. The jejunum (seventy-six cases) and the ileum (sixty cases) have been the most common sites. Seventeen patients had duodenal polyps. The exact location of the polyps in the small intestine was not mentioned in thirteen cases. Only one extraintestinal polyp was noted in the last forty-two cases and this was a papilloma of the bladder. The distribution of the polyps by site of occurrence is shown in Table I. In ninety-two of the 117 cases (79 per cent) more than one polyp was discovered in the gastrointestinal tract, while in only fourteen cases (12 per cent) was the patient thought to have a single polyp. In the remaining eleven cases the data were inadequate to determine the number. Again it must be stressed that the finding of one polyp is sufficient reason for a careful search for others.

Symptoms.—Episodes of abdominal pain and some form of gastrointestinal bleeding were the major symptoms. Recurrent attacks of colicky abdominal pain characterized ninety-nine of the 117 cases (85 per cent). These were invariably related to an intussuscepting polyp, and about a third of the time they were associated with a palpable abdominal mass. Hypochromic anemia, apparently from slow loss of blood in the gastrointestinal tract, was found in thirty cases (26 per cent). Melena and rectal bleeding were present

in thirty-nine cases. Hematemesis was mentioned in six cases; in five of these it was associated with polyps in the stomach or duodenum, and in the sixth, jejunal polyps alone were demonstrated. Prolapse of a polyp through the anus was the initial complaint in two cases. Two other patients had no symptoms at all, the diagnosis being suspected because of abnormal mucosal pigmentation in one and on the basis of postmortem examination in the other. Multiple surgical procedures have been all too frequently performed but careful search for multiple polyps at the initial operation may reduce the number of subsequent operations in the future.

Pathologic Characteristics.—There continues to be a decided lack of detail in the realm of pathologic findings in the reported cases. In eight more reported cases one or more polyps have been considered to be malignant, giving a total of twenty-one cases among the 117 (18 per cent). The majority of polyps declared malignant, as reported in the first review, were found in the small intestine. The most recent reports call attention to malignant transformation in polyps in the small bowel (four cases), the rectum (two cases), the colon (one case) and the stomach (one case). Three of these patients were between twelve and twenty-two years of age and the remaining five were between fifty-five and sixty-eight years of age. In none of the reports of these cases were photomicrographs of tissue included. Again, except for Bailey's case¹⁸ in which carcinoma of the rectum was reported, there was no mention of the polyps spreading locally or metastasizing generally. Such features as mitosis, invasion of the stalk of the polyps or the bowel wall, and hyperchromatism have been listed as the criteria for the diagnosis of malignancy of a polyp.

Comment

The complete clinical pattern of this syndrome is now quite apparent and requires little discussion. Pigmentation of the lips and buccal mucosa is almost always present. Uncommon sites for pigment even in this syndrome are becoming more frequently recognized because of the diligent search on the part of the clinician. Slightly more than half (55 per cent) of the patients have some evidence of the familial nature of this disease. The disease of the remaining patients continues to fall into the realm of sporadic mutation. The symptom complex remains remarkably uniform.

A search for the abnormal pigmentation in unusual situations may occasionally be very rewarding in instances of obscure abdominal pain, recurring abdominal masses, melena and hypochromic anemias.

The major aspect of this syndrome that remains debatable pertains to the potential malignant nature of the polyps. Although in about a fifth of the cases (19 per cent) the polyps have been reported to have undergone malignant changes, there are many inconsistencies that require explanation. It is unusual that such an uncommon site for a malignant tumor as the small bowel should be so predominantly involved by carcinoma in this syndrome. It is also unusual that most malignant transformations have been reported in children and young adults. It is equally difficult to understand the total absence of local or distant metastasis from these tumors even after intervals of many years. The statement that an early abdominal catastrophe frequently overtakes these patients before malignant changes have had sufficient time to become established is not realistic in view of present-day knowledge.

The peculiar histologic characteristics of the polyps that we have been able to study have led to the suggestion that these tissue excrescences represent a developmental abnormality rather than true adenomatous polyps. The three predominant types of cells of the normal mucosa of the small intestine, namely columnar absorbing cells, goblet cells and coarsely granular Paneth cells, were found within the jejunal and ileal polyps that we have studied in five cases. Furthermore, these cells were disposed in numbers and in relation to the glandular structures much as they are in normal mucosa. Bands of smooth muscle are frequently present in the substance of the polyps. Brunner's glands may be present in duodenal polyps and parietal (acid) cells in gastric polyps in this condition (Fig. 1). This reproduction of normal histologic characteristics is unlike ordinary neoplasia, in which usually but one type of cell is proliferating. The over-all pattern of these polyps strongly suggests that they are the result of a growth disturbance similar to that which produces hamartomas of the lung. The fact that muscle is a component of the polypoid mass and that glandular structures have been present in the wall of the intestine in some reported cases further suggests that the condition represents a developmental abnormality.²

In patients who did not exhibit mucocutaneous pigmentation we have observed several polyps of the small intestine that were histologically identical to the polyps in our patients with the Peutz-Jeghers syndrome. Furthermore, some patients have had the typical mucocutaneous pigmentation but no evidence of polyposis. One wonders whether these two types of cases represent incomplete manifestations of the syndrome. In some instances, of course, the pigmentation was probably overlooked. We have also observed four examples of polypoid lesions of the small intestine that were composed of gastric heterotopic tissue unrelated to Meckel's diverticulum. These were in patients who did not have the Peutz-Jeghers syndrome. Similar cases have been described in the literature.²⁰ This polypoid reduplication of gastric glandular structures in the small intestine obviously represents a growth anomaly and perhaps lends credence to the idea that the polyps of the Peutz-Jeghers syndrome are actually a hamartomatous formation.

None of the polyps that we have studied in the Peutz-Jeghers syndrome have appeared malignant or even premalignant. Mitotic figures, although present, are seen no more frequently than they are in normal intestinal mucosa. We strongly advocate, as Dormandy² has, that resections should be as conservative as possible. In our own experience with seven cases the only death related directly to this syndrome was the result of malnutrition following extensive resections of bowel. A striking fact is that in a total of 117 reported cases of the Peutz-Jeghers syndrome, not one metastasizing carcinoma of the small intestine has developed.

A word of caution should be expressed concerning the polyps in the large intestine. Although the colonic and rectal polyps that we have studied in patients with the Peutz-Jeghers syndrome have appeared benign (Fig. 2), we have no evidence to suggest that these patients are immune to the development of ordinary adenomatous polyps and carcinomas in these locations. In fact it is quite likely that Bailey's¹⁸ patient who had an inoperable carcinoma of the rectum was an example of the Peutz-Jeghers syndrome in which an incidental carcinoma of the rectum developed. Careful clinical, roentgenologic and pathologic studies must be correlated before a final plan for treatment of the colonic polyps is determined.

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Observations with Dartal in Chronic Psychoses

A Study of Seventy-one Patients

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THE purpose of this report is to summarize the results obtained in a group of psychotic patients treated with a new phenothiazine derivative, Dartal.* The study, which involved a total of seventy-one chronically ill patients, was carried out over a seventeen-month period at the Moose Lake State Hospital.

Dartal may be described chemically as 1-(2-acetoxyethyl)-4-(3-(2-chloro-10-phenothiazinyl)propyl) piperazine dihydrochloride. Although its site of action has not been positively identified, its principal effects are on the subcortical areas. Behavior studies¹ in animals indicate that Dartal and chlorpromazine have qualitatively similar effects upon the central nervous system; however, Dartal, on an equal weight basis, is five to ten times more potent than chlorpromazine. The only exception to this finding is that the two drugs effect approximately equal potentiation of hexobarbital-induced sleep time.

The seventy-one chronically ill females selected for this study, although they were in different categories diagnostically (Table I), had in common the fact that other therapeutic measures had produced little or no favorable response. Many of these had previously evidenced refractoriness to electroshock and insulin shock, hydrotherapy, various ataraxics, and even psychosurgical procedures (seven patients). In age, the patients ranged from

twenty-four to seventy years; they had been ill for periods ranging from two to twenty-six years.

TABLE I. DIAGNOSTIC CATEGORIES

	Number of Patients
Schizophrenic reaction	52
Manic depressive reaction	8
Involuntal psychotic reaction	4
Mental deficiency with psychotic reaction	4
Chronic brain syndrome with cerebral arteriosclerosis	2
Chronic brain syndrome with Alzheimer's disease	1

Method of Treatment

Before initiating Dartal treatment a white blood count was done on each patient; this was repeated once weekly for six weeks, then once every four weeks. Dartal was given orally in tablet form. For a few of the patients the tablet was crushed prior to administration as it was discovered that the patient had difficulty in swallowing the tablet whole. Medication was begun with 10 mg. doses twice daily, and was increased after three days to 20 mg. twice daily. Only occasionally was a dosage of 40 mg. daily exceeded and no patient received more than 75 mg. daily.

In the early weeks of the study, we administered relatively large doses but we found that this was poorly tolerated and most of the patients developed definite symptoms of Parkinson's syndrome requiring discontinuation of Dartal. By starting at a lower dosage and increasing it slowly the undesirable side reactions were reduced to a minimum and the medication was better accepted by the patients and ward personnel. On the adjusted dosage, fourteen patients developed extra-

From the Moose Lake State Hospital, Moose Lake, Minnesota.

Dartal is a trademark of G. D. Searle & Company.

*The drug under the code number of SC-7105 was kindly supplied by G. D. Searle & Co., Chicago, Illinois.

CHRONIC PSYCHOSES—FERRAND

TABLE II. RESPONSE TO DARTAL THERAPY

Diagnosis	Number of Patients	Clinical Recovery	Marked Improvement	Moderate Improvement	Slight Improvement	No Improvement	Discontinued because of Side Effects
Schizophrenia	54	6	18	16	4	8	2
Manic depressive psychosis-manic	5	1	0	1	1	1	1
Manic depressive psychosis-depressed	3	0	0	1	0	2	0
Involuntal psychotic reaction	3	1	0	1	1	0	0
Mental deficiency with psychotic reaction	3	0	0	1	2	0	0
Chronic brain syndrome with cerebral arteriosclerosis	2	0	0	0	0	2	0
Chronic brain syndrome with Alzheimer's disease	1	0	0	0	0	1	0
Totals	71	8	18	20	8	14	3
Percentage of total		11.2%	25.4%	28.2%	11.2%	19.8%	4.2%

pyramidal symptoms which were controlled, however, by the addition of Cogentin to the therapy.

When an optimum dosage level was reached, treatment was continued for periods varying from four weeks to seventeen months. The greater the duration of the patient's condition, the longer was the course of Dartal therapy required. However, most of the patients showed beginning improvement within two to four weeks after initiation of treatment. Dartal therapy was continued for at least two months, even when there was no response, before discontinuing it as a failure.

When a patient achieved an apparent maximum benefit from Dartal her dosage was continued for a variable period and then slowly reduced and finally discontinued. The relapse rate after discontinuation was fairly high. Some patients suffered a relapse shortly after discontinuation with a recurrence of their previous psychotic symptoms.

Three patients while receiving Dartal manifested a complete social remission and were provisionally discharged. The medication for these patients was discontinued before they were discharged from the hospital as Dartal was not yet available on prescription. All three patients returned because of reappearance of psychotic symptoms. From the history obtained on their return, it was determined that they had maintained good adjustment at home for three to six months before relapse.

It is evident that the optimal duration of Dartal therapy must be decided individually for each patient. However, patients who have been ill for extended periods will invariably require prolonged Dartal therapy. In most patients requiring prolonged treatment a daily maintenance dosage of 10 mg. to 20 mg. at bedtime was found sufficient after initial therapy had been successful.

Results

The evaluation was made by the psychiatrist in charge, the supervising ward nurses and aides.

Objectively, the normalizing influence of Dartal became apparent through increased patient cooperation with hospital and ward routine, accessibility, and by a reduction of agitation, tension, delusions, confusion, assaultiveness and other gross manifestations of psychosis. In 76 per cent or fifty-four of the seventy-one patients, changes occurred in motor activity from restless, overactive, excited manifestations to quiet and normally active behavior. Hostility reactions, combativeness and destruction of hospital property were supplanted by less aggressive behavior and the patients became easily manageable. Most gained weight while receiving the Dartal therapy.

Subjective improvement became evident when the patients expressed themselves in the following terms: "I feel better," or "I feel more relaxed." Others said, "I like my work assignment," "I enjoy activities and visiting with other patients," "I eat better," or "I sleep better."

The therapeutic results were graded into the following groups:

1. Clinically recovered. Psychotic symptoms objectively and subjectively completely or almost completely subsided; the patient is able to return home to have a full-day work assignment, is socially productive and shows some insight into his condition.

2. Marked improvement. Symptoms subsided considerably, objectively and subjectively; the individual is about to return home and to work, doesn't yet show insight but under minimal supervision could make an adequate adjustment outside the hospital.

3. Moderate improvement. Favorable effects are seen objectively; the patient shows some social improvement; behavior is improved to the extent that the patient is co-operative and adjusted fairly well to hospital environment, participates in industrial assignment and hospital social activities; patient frequently has ground privileges but becomes disturbed occasionally and is therefore not considered well enough to live outside the hospital.

4. Slight improvement. Patient is managed somewhat more easily but still manifests overtly psychotic symptoms with occasional hallucinations, excitement and assaultive and destructive behavior.

5. No response or very little transitory response.

Table II summarizes our findings in this study with regard to the number in each category that evidenced various degrees of improvement.

Of the total of seventy-one patients, eleven were provisionally discharged, eight are being processed for provisional discharge, and many others, for the first time in many years, are able to go home on frequent temporary visits.

Side Effects

At optimal dosage levels of Dartal, side effects were gratifyingly low in incidence and of a rela-

tively mild nature. Drowsiness and a sense of fatigue were frequent early symptoms occasionally followed by postural hypotension. Those symptoms usually subsided within eight to ten days.

One patient in whom a macular skin reaction developed (which did not respond to antihistaminic drugs) required withdrawal of Dartal. In another patient, who had a history of previous seizures and who was receiving anti-convulsive medication, the frequency of seizures increased and Dartal was discontinued.

Summary

Dartal was found to be a highly effective tranquilizing drug in that 76 per cent of our seventy-one patients showed some degree of improvement. In many of these individuals there had been no favorable response to other therapy. Because of a low incidence of undesirable reactions (4 per cent), the patients more readily accepted Dartal therapy than other methods of treatment. Many patients were eventually maintained on a low daily dosage.

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(Continued from Page 847)

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Strategy is Everybody's Business

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It is always a genuine pleasure for a research professor to be unchained—temporarily—from his shelf in the ivory tower and afforded the chance to inflict his theories on a whole roomful of practical-minded men of affairs. I hope to prove, however, that one of the most practical, down-to-earth assignments for the American doctor today is to become a serious student of Public Affairs—including politics, economic philosophy, foreign policy, national defense strategy and the educational theory that molds your children—and through them—the will and character of this nation in the time of trouble that lies before us. For the next two decades may decide the fate of man for the next 500 years, or forever.

Doctors are often very stern when they prescribe for patients who refuse to take warning signs seriously. May I, as a layman, turn the tables and be somewhat stern with this distinguished body? The "patient" in this case is the body politic: a free society which encourages individual initiative in business, law, medicine and engineering. The diagnosis for that civilization is cancer in the intestines and paralysis of the will. The prognosis is an untimely end for a patient too soft to endure surgery, too undisciplined to take medicine, too purposeless to survive. It will involve intellectual therapy and moral hygiene; or, in old-fashioned terms, homework and willpower.

I hope to demonstrate that it is important for doctors to think about political muscle tone,

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ideological x-rays, and preventive education. I hope also to indicate that—unless at least one man out of every three in this room commits himself to an active role in Public Affairs—then it is unlikely that your profession will survive its competition. By "competition," I do not mean the friendly race between Blue Cross and other insurance programs. There is a new kind of "competition" abroad in the world today. This form of competition is designed to destroy—utterly and for all time—the moral, legal and political framework of the civilization which undergirds our voluntary society. If Genghis Khan and Company win this competitive struggle, there will be no second chance for freedom.

The American Voluntary Society faces two mighty competitors—World Communism and International Socialism. Some students would argue that Communism and Socialism are twin engines in the same juggernaut. But perhaps there are useful distinctions. The threat of Communism is largely external, military, scientific, political, and economic. It is an *immediate* threat. Its weapons are violence, subversion, propaganda and blackmail. The danger of Socialism is largely internal and long-range. Its weapons are education, persuasion and the ballot-box.

Many Socialists are firmly opposed to the force and terror of Communism. Socialists—unlike hard core, fanatical Communists—are sometimes open to counter persuasion from men sufficiently articulate to debate issues with them. Socialists have been voted out of power in England and Australia—but when Communists have been threatened by the will of the people, they have, as in Hungary, sent in armored divisions to crush the opposition to lifeless pulp.

Although I do not in any way agree with Socialist economic theory, it is only fair to admit that many Socialists—as human beings—are honorable, decent and even idealistic people who want to achieve good things for humanity. They are not professional revolutionaries or conspirators like the Communists. Indeed, some Socialists are so idealistic they cannot comprehend how ruthless and cynical Communists can be. When Communists come to power, Socialist intellectuals are often the first to be purged. In Czechoslovakia, for example, a Socialist leader named Masaryk tried to walk a "middle course" between Communism and Western Democracy. He ended up, still in the middle-of-the-road all right—but from nine stories up where someone had pushed him out of the window.

Although they use different means, both Communism and Socialism confront America with a mortal challenge—and we are in danger of being caught between hammer and anvil. The external threat is ubiquitous and terribly real; yet free men hesitate to oppose the Communist enemy on all fronts for fear we may gradually surrender our own civil liberties, economic freedoms and political liberties to Big Government here at home.

Is there any way out of the dilemma? One remedy is to apply the American genius for voluntary action to the realm of public affairs. But this requires that the managers and professional leaders of our society must make Public Affairs their avocation—their full-time hobby. They dare not hold aloof from political life and from hard intellectual effort. They will have to do their "homework" in philosophy and history. And they must not wait for another Pearl Harbor or giant depression to move them to prudent action.

Pearl Harbor proves a point—because Pearl Harbor was an event that permanently changed the lives, fortunes and future of every man in this room. Beyond that, Pearl Harbor radically revised American axioms about world geography and power politics. In a handful of minutes, Japanese dive-bombers not only sank our Pacific Fleet; they also torpedoed unreal assumptions about the technical capacity of "foreigners" and the use of trade or good will as effective means of deterring aggression.

We had thought that East was East and West was West. We learned the hard way that 20th Century America is cheek by jowl with the Orient,

that the Burma Road intersects with Main Street, that Tokyo and Berlin—and now Moscow and Peiping—are closer to Chicago than Philadelphia was to Boston at the time of the American revolution.

These lessons were derived from the bombing of December 7, 1941. But on December 6, 1941, America was already at war, even though we didn't know it; for while it takes two to keep the peace, it takes only one to make a war. So, as America slept, the carriers of Imperial Japan were converging on Hawaii. The bombs had been loaded, the pilots briefed, the mission assigned, the die cast for our people by war lords on the far side of the earth. We learned that war starts—not at the moment of the surprise attack—but when the enemy completes *his* final plans and commits *his* resources to conflict.

Again we are at war—a new kind of war with unorthodox rules and camouflaged weapons. Our failure to recognize that fact does not affect the designs of the Kremlin. Again, it is an enemy—not ourselves—who has decided to involve the United States in conflict. Again, our own good intentions are beside the point. And, again, there is danger our country may drowse through the afternoon of its December 6, through a night of no return, into another kind of Pearl Harbor—where the hour and the place, and the cost and the sacrifice are all determined by factors outside our control.

Only this time, the odds are much heavier against America than on that other December 6, sixteen years ago. What if, in 1941, the power of Japan had already swallowed two-fifths of the earth? What if Japanese science had in some respects surpassed our own? What if Tokyo had dominated a billion people whose labor could be coerced to the cause of conquest? What if her fifth columns had penetrated every country in the world, including the United States? What if Japan had had vast natural resources, abundant water power, access to oil, no need to import steel or coal? And what if Japanese submarines and bombers, armed with atomic weapons, had been based as close as Alaska, Mexico, Canada, Catalina, Nantucket, Key West and Bermuda? The equivalent of this nightmare supposition has come to pass since 1945, with the Soviet Conquest of space and the invention of guided missiles—with the manpower of China and the resources of Eastern Europe feeding the Communist war machine—and with India, the wealth of Indonesia

and the oil-rich Middle East only three assassinations and a few street fights removed from the grasp of the Kremlin.

In short, an Asiatic conqueror stands on our frontier. Owing to science, the Atlantic Ocean is no wider than the Rio Grande. Owing to technology, the Pacific is no broader than Lake Michigan; and the wastelands of the North can be bridged in a few hours' flight. We Americans are face to face with the descendants of Genghis Khan.

Indeed, television brings Mr. Khrushchev into millions of American living rooms to lecture on the glories and inevitable triumphs of World Socialism. When a Soviet leader denounces Wall Street monopolies, his message is transmitted free of charge on the front pages of American newspapers and contributes to the general climate of opinion in this country.

"Conquest by Communication"

Khrushchev and Company are no longer a rude barbarian horde. They are disciplined in science and well-armed with engineering. They are schooled in economics and political theory. They speak many languages. They have learned to use education, literature, art, trade and even religion as weapons of subversion. Above all, they are superbly trained in the conduct of symbol-warfare—in *conquest by communication and warfare by words*.

No National Defense Against Symbol-Warfare

That is why we must talk about management's responsibility for Public Affairs and National Security. In the past, wars were chiefly shooting matches, and businessmen naturally left defense problems in the hands of America's soldiers. Today, the front is everywhere. Certain intangibles can literally "wash out" the material foundations of defense. If the world climate of opinion is mobilized against us by propaganda, we will lose markets, air bases and access to strategic raw materials. If, here at home, we lose the will to sacrifice or cynically disregard our spiritual traditions, our physical wealth will not safeguard American Civilization. Today, National Defense begins at the level of domestic political morality, the quality of citizenship training for our youth, and the reputation of American business growth both here and abroad. These "intangibles" are the clear responsibility of private citizens.

The Problem of National Survival

Ancient Carthage, with its luxury standard of living, refused to make minimum sacrifices to support Hannibal and did not survive. Cato's relentless chant—"Carthage must be destroyed"—did not awaken the indolent Africans from their preoccupation with business-as-usual. They couldn't believe that Cato, like Khrushchev, meant what he threatened. Similarly, Rome itself, entertained with bread-and-circuses and arrogant in its splendor, did not *survive* the onslaught of the Vandals and Visigoths. The technical skill that built her roads and aqueducts, the "know-how" of her administrators, the glory of her law—none of these assets saved an effete and over-civilized Rome.

Nor did Rome's Gross National Product protect her. The Visigoths had no GNP whatsoever—only weapons and will power. These dismal comments on Carthage and Rome could be repeated for other proud civilizations. Many times in the past, nations with high standards of living have been pushed to the grave by nations with low standards of dying.

History teaches us that when a people put indulgence before discipline, worship welfare and discourage risk-taking, they are likely soon to be forced into bankruptcy by a more vital Competition. Especially if they no longer believe in themselves. For nearly twenty-five years this country has been confused by a Cult of Doubt. Too many Americans suffer an odd guilt complex about their own way of life. Meanwhile the missionaries and conquistadors of the Communist Church Militant advance Marxism as the one true faith—and they are willing to die for their belief. That is why the battles of the Cold War are fought on our side of the Iron Curtain and at the Kremlin's initiative. That is why trying to contain Communism with a Maginot line of dollars and diplomacy is bound to fail. We forget that no *status quo* power has ever checked the thrust of a dynamic barbarian—for even if the "Defense" is 90 per cent successful on every occasion, a civilization can be driven to its doom ten yards at a time.

Startling Soviet Technical Gains

In 1945, America enjoyed absolute air-atomic supremacy. In less than a decade, Russia has broken our monopoly in nuclear weapons, beaten us into space, produced jet aircraft and tested guided missiles. A system once contemptuously called the "ox-cart economy" has built the world's second

largest navy, graduates more than twice as many engineers as America, and, by ruthlessly disregarding the claims of its consumers, is out-producing us in heavy machine tools, the basic equipment of war.

The Real Threat: Soviet Fourth Dimensional Warfare

But the greatest threat to our civilization may not stem from Soviet guided missiles or engineering of atomic weapons. We have brilliant scientists, able generals and inventive industrialists who doubtless can safeguard National Security on the technological front. It is in the realm of "Fourth Dimensional Warfare"—or psycho-social combat—that we are hopelessly outclassed. We know a lot about the tricks and techniques of mass persuasion—but we have not yet applied that knowledge to the main challenge of our time—how to beat Communism without fighting a hot war.

We use advertising skills and the "hidden persuaders" to change consumer taste in salad dressing. We use high-powered public relations to boost the box-office appeal of a rock-and-roll cowboy. The Soviets exploit Pavlov, propaganda and group dynamics to overthrow empires and condition the masses to become addicts of Socialism. They use psychology to win the world.

Propaganda has always been a tool of the Conqueror. In the age of radio, television and mass literacy, however, political warfare has become a *primary* weapon. The Communists, like the Nazis before them, use the strategy of terror to frighten the West into inaction, to promote class warfare and thus divide and conquer, to encourage neutrals to ride the Soviet wave of the future. The danger of the Russian sputnik is not just that it means Moscow can probably put a missile on New York or, in the near future, aim atomic guns at Pittsburgh and Detroit from a platform in outer space. Sputnik is a symbol of Successful Socialism. All over the world, intellectuals and politicians—already half in love with Marx, are saying: "If Socialism can do such wonderful things in science, why not give it another chance with business? If Communism is efficient in the laboratory, let's try it in our factories. If Marxism can plan a sputnik and build so many splendid schools of engineering, we must have Social planning and Social engineering for every part of our society. Capitalism is obsolete."

Despite the record of American enterprise, millions of people—including some in this country—will believe that propaganda. Why? Because very few Americans can articulate what it is we really stand for. We perform, but performance is not enough in an age of mass media. The Communists capture the slogans, manipulate the symbols, pervert the communications. The *facts* are on our side; but facts don't necessarily move men to action. More often, men are motivated by *theories*, by hopes and hatreds, by envy, fear or inspiration. The Communists have done their homework in the human subconscious. From superstitions and buried emotions and bedrock beliefs, they have mixed the weapons of fourth dimensional warfare.

They have put this knowledge to practical use. With blackmail and infiltration, they captured Czechoslovakia without firing a shot. That meant they got the Skoda Works intact. For thirty years Moscow trained many oriental Communists in its academies of political warfare. The alumni are today the rulers of Red China, the overlords of North Korea, the leaders of the Communist thrust into Southeast Asia. No Russian soldiers died to score these victories. In recent months, Communism has won elections in India, Indonesia and South America. It has penetrated Syria and Egypt. It is growing like a weed in the fertile fields of Africa. It controls powerful party machines in France and Italy. Communist political strategy, in short, is not an ivory tower experiment. It pays Moscow huge dividends in real estate, military bases, raw materials, manpower—and continuous trouble for the United States.

These things don't happen by accident. Communism is not just an idea; it is a power-technique. Behind the Iron Curtain, there are more than 100 schools and colleges of propaganda and subversion. Many Russians get a first-class education in math, physics, and foreign languages. But other Russians—and selected recruits from Asia, Africa and Latin America—receive professional training in Conflict Management and psychological tactics. We have the Harvard School of Business; they have the Lenin Institute of Political Warfare—for politics is the chief business of Communism.

It is imperative, of course, for this nation to win the contest of science, electronics and military hardware. Otherwise, the Soviets will blackmail us into surrender. But we cannot guarantee our security by simply catching up or staying ahead in science. After all, we *were* ahead of them for

thirty-five years when, in spite of our technological superiority, they scored victories by irregular methods. We must create a shield of science to ward off a hot war; but we must also learn to make stronger moves on the ideological, political and economic squares of the Cold War Chessboard.

To do that, we must raise the standards and improve the quality of education in economics and philosophy, American History, political science and foreign languages—as well as in science and engineering. And we must not be afraid of competition in the classroom, for young America in the next two decades is going to face the most ruthless competition the world has ever known.

American Business cannot afford to be a mere spectator at this match for the future of mankind. The "managers" of Soviet Society are all committed to agitation and politics. They are conflict minded. You can't do business with Moscow, because Communists are not businessmen or statesmen. They are professional revolutionaries. Their foreign aid personnel are commandos; their artists are propagandists; their diplomats are spies; their economy is based on the cost accounting of the battle field, where every resource is squandered in order to defeat the enemy. Since Communists have a combat mentality, you can't reason with them. If we don't want to fight them—or surrender—we must learn to beat them in the precincts of the Middle East, in the lobbies of the United Nations, in our own classrooms and pulpits, and before the court of world opinion. Our own managers dare not be aloof to this challenge.

The Communist Party, through the apparatus of *total* government, can mobilize the total resources of the Sino-Soviet Empire. Our limited government, by definition, cannot and should not compete with Moscow across the board. If it did, Washington would have to regulate business, control the press, police our schools and regiment our voluntary agencies. This means that, unless private institutions take over many areas of non-military defense, the ubiquitous thrust of Communist Conflict Management will be unchecked at crucial points.

Why should business be asked to serve? Primarily, because our *economic* system is the crux of the whole struggle—and because, in a sense, this is the Business Society. Each year, a very high percentage of our college graduates are recruited by Business. Although there are extremely able men in other walks of life, our greatest reservoirs

of inventive talent, drive, organizational vitality and brainpower lie in the world of industry, commerce and finance. Yet with certain notable exceptions, Business Leadership has not taken full responsibility for safeguarding the moral, intellectual and political framework which ensures its opportunities to make the economic system "pay off" for all America.

Businessmen Cannot Stand Aloof from Politics

This Republic was founded, of course, by bankers and lawyers, businessmen and a general. The frontier was "civilized" by business leaders who took an active part in the *citizenship function*. Today, however, many business leaders regard "politics" as beneath their dignity. Unfortunately, American civilization can be crippled—and even destroyed—by concepts which lead first to changes in the "climate of opinion" and, ultimately, to the *hard facts* of power politics.

If the "Business Society" is destroyed outright—or simply "withered" by politics and propaganda—business leadership has only itself to blame. After all, every great corporation has more than enough "surplus" to allow some of its best brains to stop thinking about production and sales and start thinking about National Defense, Citizenship Education, Foreign Policy and Economic Philosophy. One way for business to attack these complex problems systematically—and with sophistication—would be to build an Academy of Industrial Statesmanship. This would be, in effect, the equivalent of the Harvard School of Advanced Management in the area of Public Affairs, National Defense, Citizenship Training, and the "theology" of American-style capitalism. Its purpose would be to produce articulate champions of freedom who could compete with the lobbyists for Marx in the never-ending battle to condition the climate of opinion.

Another place to improve the machinery of Ideological Defense might be with the lever of Corporate Philanthropy. American Business now gives to good causes more than \$500 million a year. Perhaps 5 per cent of that total should be used to pay a cultural life insurance premium on America, in the light of Khrushchev's boast that our grandchildren will live in a Soviet Socialist America. Recent events suggest at least three more questions about private philanthropy:

1. If the Soviet challenge is not to result in eventual Federal control of our schools, must not

business give even more generously to improve the quality of American education?

2. Cannot business get much more for its charitable dollar by applying the same professional standards to giving away money that it does to making it in the first place?

3. Should not industry begin to reappraise its pattern of giving—shifting some investments from the portfolio of community welfare to the portfolio of National Survival, allocating priorities, evaluating results and, in general, managing corporate largesse with the same discrimination and purpose that mark other phases of business operations?

Goals for the Future: Vice Presidents of Public Affairs

Ultimately, it may be desirable—even necessary—for great corporations to appoint Vice Presidents of Public Affairs to spend full time on these matters. A waste of talent? At the beginning of the century, certain firms refused to adopt advertising. They perished. Now, most firms are hospitable to the subtler meanings of Public Relations. But beyond orthodox "public relations" lies the arena of Public Affairs in which the fate of American Civilization may well be decided in the next decade.

The Ultimate Weapon

One word more. The ultimate weapon is neither science nor politics nor psychological warfare. The ultimate weapon is human courage—and faith in certain unalterable moral laws. Unfortunately, some people have forgotten the true meaning of America. We are already half afraid of the honorable word "revolution," although we are the true revolutionaries. It was an American Revolution that gave the world its finest revolutionary ideal—the notion that government is the servant, not the master, of the people. The Communists—who call us "reactionary"—have turned society back to the days of the Pharaohs. The monuments to "Socialist Progress" erected in the USSR—like the pyramids of ancient Egypt—have been built with slave labor.

We Must Not Perish through Failure to Recruit Our Elite

On the other hand, we Americans have developed the most flexible, continually progressing society known to man. Our so-called "masses" already enjoy luxuries undreamed of in other parts of the world. Our unique type of capitalism—

almost as different from European cartel-capitalism as it is from Socialism—produces more welfare and more social justice than Communist Functionaries would even dare to imagine. But beyond that is the fact that we are truly free men. We have plenty AND freedom, together. We must not let this remarkable experiment in human liberty and opportunity perish from want of courage, or lack of sophistication, or failure to meet the problem with the ablest human resources at our disposal. That is why these questions of National Strategy and Public Affairs urgently require the attention of this audience.

It may be argued, of course, that the profession of medicine is a thing unto itself, that doctors have no business to "intervene" in the great affairs of state. The health of a democracy depends, however, to a large degree on the quality of its participating units. If doctors are to abdicate their responsibilities as citizens, why should not engineers and scientists, college professors and bankers take a similar view? In a sense, we are all professionals; and we are also all responsible for preserving our freedoms. If we are to safeguard a society in which political ethics make possible professional ethics, we dare not leave the formation of public opinion to demagogues. American doctors who are "too busy" to engage in public affairs—or do their homework—may find, in the years to come, that they may have to spend full time in some dismal underground, as did their colleagues in Nazi Germany or as men do today in Poland, Hungary and Czechoslovakia. Never before in history have the moral implications of the Hippocratic Oath been more urgently required, not alone for medicine, but for the whole free society.

The task may seem enormous; but the stakes are even higher. And let us remember that great events are always determined by minorities. Forty years ago Communism was confined to a rented room in Zurich, the brains of Lenin and the ambition of a few other outcasts. Less than 100 men made the American Revolution. For a time the whole future of this nation was carried in the will and heart of a lonely man who walked the winter lines at Valley Forge persuading his ragged countrymen not to quit and go home. There is more than enough talent in this one room to change the course of history. But time is impartial. In politics and war, as in business, time is only on that side which knows how to use it.

Very large amounts of replacement fluids are necessary as a life-saving measure in the early treatment of burns. Here is presented a workable formula for determining the large replacement needs in terms of both the colloid and electrolyte-containing solutions.

Electrolyte and Fluid Therapy in Burned Patients

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VIGOROUS controversy between different surgical centers still attends many features of the over-all management of severely burned patients. However, during the past fifteen years some unanimity of opinion has emerged regarding the early management of the severely burned patient during the so-called "shock" phase of the problem. Extensive basic research and clinical experience have crystalized several basic fundamental principles that we shall discuss.

Current ideas of replacement therapy for burned patients are an outgrowth of the 1942 meeting of the Committee on Burns of the National Research Council. Under the chairmanship of Dr. I. S. Ravdin, recommendations were made for replacement therapy predicating fluid requirements on the area of skin surface burned. The final plan adopted by this group provided 75 cc. of plasma and 75 cc. of saline to be administered for

each 1/100 (1 per cent) of body surface burned, the total amount to be given during the first twenty-four hours after burn. *This initial replacement formula ignored the relationship of tissue mass to the problem of translocation of body fluids.*

The wisdom of providing electrolyte replacement as well as protein replacement was demonstrated subsequently by Cope and Moore.¹⁻³ Their studies revealed that the concentration of protein in burn bleb fluid is equal to one-half to two-thirds that of normal plasma, whereas the electrolyte pattern and concentration of burn bleb fluid are equal to those found in normal plasma. These classic studies assessed the pathologic physiology of body fluids in the burned patient by means of radioactively tagged protein and red cells. The authors were soon impressed with the inordinate quantities of saline and water given

as initial replacement therapy to the burned patient when replacement needs were calculated on rising values for hematocrit and hemoglobin. One patient, reported in their early studies, received during the first twenty-four hours after burn a total of 21,313 cc. of fluid, and the urine output was 6,855 cc. for this twenty-four-hour period (1947). It was apparent that "mass of tissue" constituting the body of the organism needed to be considered in replacement needs.

The significant studies of Evans, Purnell, and associates were reported in 1952.⁴ They found that dogs, burned experimentally, lost plasma in the amount of 1 cc. for each 1/100 (1 per cent) of body surface burned for each kilogram of weight; this rather constant loss was manifest usually by the sixth hour after burn. Their clinical studies, reported in 1952, revealed deaths from pulmonary edema secondary to over-infusion of colloid materials and electrolytes within the first twenty-four hours after the burning accident. A patient weighing 61 kg. and injured with a 92 per cent burn received 14,460 cc. of fluid within the first twenty-four hours, and all of this was given as colloid- or electrolyte-containing solutions (5,300 cc. of plasma and 9,160 cc. of saline). Pulmonary edema was severe in this case, and the patient subsequently died. Another patient, nineteen years old and weighing 57 kg., was injured by a 63 per cent burn; he received 16,000 cc. of fluid within the first twenty-four hours and died in four days of severe pulmonary edema.

Several important guiding principles were established by these authors, and they bear repetition here because of their impact upon prevailing ideas in this field today.

1. Whole blood and plasma should be used in equal amounts for colloid replacement.
2. Colloid materials in the amount of 1 cc. per 1 per cent of body surface burned per kilogram of weight should be given in the first twenty-four hours.
3. Saline solution in equivalent amounts (1 cc. per 1 per cent burned per kilogram) was advocated.
4. The hourly urinary output was recognized as an effective measure of the adequacy of fluid replacement.
5. The necessity for rapid administration of

proper fluids immediately after the burning incident was recognized.

6. Evans, Purnell, and associates emphasized need for caution in the infusion of calculated amounts of fluids to patients over fifty years of age and also to patients burned in excess of 50 per cent of the body surface.

The practicality of this program of replacement therapy, based upon sound experiment, caused it to be widely applied during the past few years.

Recently the experience of the Surgical Research Unit at Brooke Army Hospital has been popularized throughout the country.^{5,6} Their immediate management of severely burned patients calls for replacement therapy with colloid materials in the amount of 0.5 cc. per 1/100 (1 per cent) of body surface burned per kilogram of weight, electrolyte-containing solutions in amounts of 1.5 cc. per 1/100 (1 per cent) of body surface burned per kilogram of weight, and 1,000 to 1,500 cc. of dextrose in water to cover insensible loss. This total amount of fluid is recommended for the first twenty-four-hour period, and roughly one-half of this amount during the second twenty-four-hour period.

Recent experience at the Minneapolis General Hospital and the University of Minnesota Hospitals has substantiated the adequacy and effectiveness of the planned replacement program of Evans and Purnell. When small children and patients over fifty-five to sixty years of age have received electrolyte-solution replacement according to the regimen of the Brooke General Army Unit (1.5 cc. per 1 per cent burned per kilogram), pulmonary edema has been a disturbing complication in certain instances. However, the importance of using sodium chloride to some degree in the initial replacement therapy was classically demonstrated recently at the Minneapolis General Hospital.

For several years prior to 1955, during a study of fluid and electrolyte changes in patients with burns covering more than 30 per cent of their body surface, patients at the General Hospital received only plasma and dextrose solution during the first twenty-four hours postburn. Serum concentrations of sodium, chloride, potassium, carbon dioxide, and proteins were obtained daily and evaluated against urinary excretions of these materials. Quantities of fluid and colloid to be replaced were determined by a formula of 1 cc.

ELECTROLYTE AND FLUID THERAPY—HITCHCOCK

TABLE I. WATER INTOXICATION FROM INITIAL IMBALANCE IN REPLACEMENT THERAPY
Patient with 80 per cent Body Burn at Minneapolis General Hospital

Patient:	Admitted: July 15, 1955
Wt., 57 kg.	45 min. after 80% burn
Age, +18 yr.	from explosion in home
Calculated intake for first 24 hours:	(Evans Formula)
Colloid	$57 \times 50 \times 1 =$ 2,850 cc.
Electrolyte	$57 \times 50 \times 1 =$ 2,850 cc.
Insensible loss	2,000 cc.
Total	7,700 cc.
Replacement therapy received for first 24 hours, calculated according to study program:	
Plasma (colloid)	4,325 cc.
Dextrose 5 per cent in water	4,000 cc.
Total	8,325 cc.
Urine output in first 24 hours	1,650 cc.
Chemistries 24 hours after burning:	
Sodium	110 mEq./liter
Chloride	75 mEq./liter
Potassium	3 mEq./liter
Patient was irrational with severe water intoxication at this point (note sodium of 110)	
Replacement therapy for second 24 hours:	
Plasma	500 cc.
Dextrose in water	4,800 cc.
Late in day sodium chloride was given as hypertonic solution, 388 mEq. or 22.5 gm. of NaCl	
Total	5,300 cc.
Urine output in second 24 hours	2,950 cc.
Chemistries 48 hours after burning:	
Sodium	135 mEq./liter
Chloride	94 mEq./liter
Carbon dioxide	27 mEq./liter
Patient recovered from water intoxication (cerebral edema) by 60 hours after burn	

plasma per 1 per cent of surface burned per kilogram weight during the first twenty-four hours and an equal amount of dextrose in water in the same period of time. Sodium and chloride replacement during the second and third postburn days was determined by the serum concentrations prevailing twenty-four hours after the burning accident.

A young woman, aged eighteen, was admitted with an 80 per cent third-degree burn, arriving in the hospital forty-five minutes after her accident. Table I details the replacement therapy she received during the first forty-eight hours. According to the formula of the study program, she received 4,325 cc. of plasma and 4,000 cc. of dextrose (5 per cent) in water. Urinary output for the twenty-four-hour period was 1,650 cc.

Twenty-four hours after arrival in the hospital the patient was completely irrational and difficult to manage; the serum sodium at this time was 110 mEq. per liter, and the serum chloride was 75 mEq. per liter. The patient was in a severe state of "water intoxication." Such a condition of water logging of somatic cells in all parts of the body, due to the severe degree of hyponatremia and hypotonicity of circulating plasma and interstitial fluid, is one of the most serious electrolyte disturbances encountered by the human body. Darrow and Yannet first focused attention on

this phenomenon, and many investigators have subsequently confirmed it.⁷ Water moves into the cells in the face of lower sodium levels of the extracellular fluid, and it makes no difference whether dilution of the extracellular space occurs from addition of inordinate quantities of water or subtraction of sodium; the end-result is the same. The balance of intracellular water with extracellular water is governed by the concentration of extracellular sodium at any given moment. Severe central nervous system disturbances are always present in this condition, and convulsions and seizures frequently occur. Unless the severe sodium deficit is corrected immediately with hypertonic salt solution, death follows quickly. Late in the second day of admission, this patient received 388 mEq. of sodium (22.5 gm. of sodium chloride) rapidly as a hypertonic solution, and the serum sodium forty-eight hours after burning was then 135 mEq. per liter. Twelve hours later, by the sixtieth postburn hour, this patient was more rational and her sensorium was clearing.

It is obvious that an attempt to prevent pulmonary edema by withholding sodium under these circumstances is fraught with great hazard. With excessive loss of colloid and fluid from the body through burned skin and into large blebs, and with extensive translocation of fluids from the circulatory compartment into the interstitial

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compartment, large quantities of fluid must immediately be replaced to the burned patient. Under these pathologic conditions strict maintenance of accepted normal values for certain electrolytes

1 COLLOID (1.0 x 70 x 40 = 2800 c.c.) BLOOD - 1000 c.c.
PLASMA - 1800 c.c.

2 ELECTROLYTE (1.0 x 70 x 40 = 2800 c.c.) 5% GLUCOSE IN
SALINE SATISFACTORY

3 D5W _____ 1500 c.c.
7,100 c.c. Total Replacement

1st 8 HOURS (1/2)		2nd 8 HOURS	3rd 8 HOURS
1800 cc	1800 cc	1800 cc	1800 cc
1.Saline 1000 cc.	1.Saline 1000 cc.	1.D5W 1500 cc.	1.Saline 1000 cc.
2.BLOOD 500cc	2.D5W 500 cc.	2.BLOOD 500cc	2.D5W 500 cc.
3.Plasma 500cc	3.Plasma 500cc		Total 7500cc.

Fig. 1. Example of basic replacement therapy in a man weighing 70 kilograms suffering from a 40 per cent burn.

may be injurious to the patient. Conversely, however, obviously severe distortions of the electrolyte pattern must be prevented, as exemplified above. Carl Moyer has aptly stated this problem and concept in a recent monograph:

"Another aspect of body fluids about which little is known, and which pertains especially to therapeutics is the peculiarities of the volume, the concentration and the composition that are most conducive to recovery from illness. At present it is assumed that, in those who are ill, the restoration or maintenance of the values which obtain during health is most conducive to recovery. This assumption is apt to be untrue in many instances. In other words, it is possible that during illness certain deviations from normal of the milieu intérieur may be more conducive to the restoration of a feeling of well-being than the maintenance of, or restitution to, normality."¹⁸

This concept applies significantly, I believe, to patients with serious third-degree burns. Our aim regarding initial replacement therapy probably should be to: (1) compensate for the large abnormal losses and translocation of circulating fluid, electrolyte, and protein, (2) prevent hyponatremia and undue concentration of the red cell mass, and (3) maintain the patient at a slightly reduced level of serum sodium tending to prevent pulmonary edema. (Since many burned patients suffer a greater or less degree of tracheal bronchial irritation from hot gases and therefore are predisposed to pulmonary edema, the latter consideration seems important to me for optimum management of these serious cases). In our ex-

perience the Evans formula, as originally published, has guided our early replacement therapy most adequately and safely. If we change it at all, we shade the electrolyte replacement downward slightly. Therefore, our basic replacement therapy for adults is as follows: colloid—1 cc. per 1 per cent burned per kilogram weight (one-third to one-half of this amount as whole blood); electrolyte—0.75 to 1.0 cc. per 1 per cent burned per kilogram weight, and dextrose in water—1,000 to 2,000 cc. Figure 1 demonstrates the rate of replacement for the first twenty-four hours after burn.

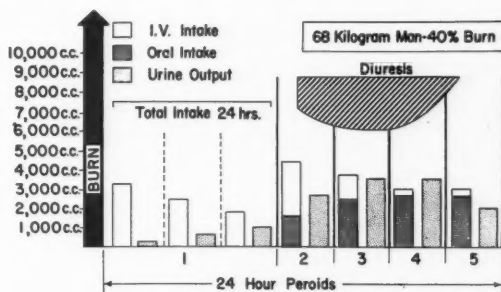


Fig. 2. Replacement therapy in burns.

Period of Diuresis

Data from the Minneapolis General Hospital reveal that the diuresis resulting from the mobilization of the extensive interstitial edema fluid into the circulating blood usually begins about the thirtieth or fortieth hour after the burn trauma. This mechanism of bodily adjustment must be fully appreciated, and administered fluids reduced in amount on the second and subsequent days after burning, or hypervolemia and pulmonary edema can result. Figure 2 portrays the relationship between administered fluid, urinary output, and diuresis in a patient at General Hospital. Note that urinary output continually increased in this man up to the third and the fourth day after burn, while the fluid intake was progressively decreased. By the fifth day after burn this patient was well stabilized on oral intake of food and fluids, with an occasional unit of whole blood administered intravenously.

The most satisfactory gauge for the adequacy of fluid replacement during the first few days after the burning incident is an hourly recording of urinary output. This method has been eminently successful in our hands, and other authors report

similar successes. There is a general consensus among authors that fluid replacement cannot safely be determined by elevations in serum hemoglobin and hematocrit values. With an adequate urinary flow, the hemoglobin usually does not rise above a level of 18 to 19 gm. per 100 cc. even during the period of severest translocation of circulating fluid out of the vascular compartment.

On occasion, undue delay in starting replacement therapy to the seriously burned patient will jeopardize his chances for survival since severe hypovolemia and shock may be present. However, if the burned patient is quickly mobilized to a hospital for treatment, and if fluid therapy is started immediately, an adequate hourly urinary output can usually be maintained. A word of caution must be spoken here, however, regarding the occasional patient who has occult renal pathology tending to alter markedly his response to fluid and electrolyte replacement.

We must always be alert for the possibility that a patient has been exposed to some toxic material (possibly carbon tetrachloride from fire extinguishers) shortly before or at the time of the burning accident. A recent experience at the Minneapolis General Hospital with a man, aged twenty-five, emphasized the necessity of careful assessment of these patients. This young man was burned while under the influence of alcohol, a lighted cigarette apparently had ignited the couch upon which he was lying. The usual program of fluid replacement was instituted immediately upon arrival of the patient at the hospital (he was under treatment thirty-five minutes after being burned) and for the first few days his urinary output was adequate. However, on the fourth day postburn the patient became oliguric and tissue edema increased to an alarming extent. Muscular contractures and twitchings were noted and serum calcium determinations indicated a severe state of hypocalcemia. Shortly thereafter the patient responded to intravenous calcium therapy, but then developed severe hypertension. His blood pressure persisted around 220 mm. of mercury systolic and 110 to 120 mm. of mercury diastolic.

Additional detailed history obtained from the patient's wife indicated that he had been treated for an obscure, mild renal disease during service with the army. It was now apparent that this patient was suffering from renal damage probably

in the nature of an old glomerulonephritis and that his response to the 35 per cent body burn (mostly deep 2nd degree) was completely out of proportion to the extent and depth of the burn.

The patient responded to a restricted fluid intake and his kidneys subsequently resumed normal function. There was, however, a period of several days following resumption of renal function when the urine was grossly bloody, and proteinuria was present. The patient slowly recovered although his course was further complicated by perforation of a gastric ulcer which necessitated laparotomy and closure of the stomach.

If our initially planned fluid and electrolyte therapy for the severely burned patient does not result in an adequate urinary output by the end of the first twenty-four hours, we can assume that fluid replacement is lagging behind bodily needs in terms of edema and excessive losses. Increasing the intravenous intake of fluid and plasma will usually correct the deficit and an adequate urinary output will result. However, if the initial urine output is low, and the patient does not enter the phase of diuresis by the end of the third or fourth day postburn, we must be alerted to the possibility of renal shutdown. This may be the result of stress adversely affecting already diseased kidneys (as in the present example), or "lower nephron" syndrome secondary to transfusion reaction. Under these latter circumstances, fluids from this point onward must be strictly limited or severe waterlogging will result.

Further, it has been my experience that patients who are inebriated at the time of their burn trauma respond poorly to therapy during the immediate postburn period. Recently a problem of "true" (unexplained) renal shutdown occurred in a fifty-nine-year-old white woman treated at the Minneapolis General Hospital following a 55 per cent third degree body burn, sustained during a period of acute alcoholism. In spite of an adequate fluid intake during the first few days the urinary output dropped from 290 cc. on the first day postburn to 70 cc. on the third day postburn (urine output ranged from 30 to 90 cc. daily until death). By the ninth day postburn, the patient still had not diuresed and generalized edema was a serious problem. The serum sodium was maintained near 135 mEq. per liter until the fifth day postburn when it fell to 125 mEq. per liter for a period of several days. The patient

expired rather suddenly on the ninth day of hospitalization and, as is so commonly noted under these circumstances, no specific cause of death was found. She responded well to the open treatment of her burns and during most of her hospital stay oral temperatures ranged from 98° to 99° Fahrenheit. At no time did we suspect or find evidence of bacteremia. Histologic sections of the kidneys removed at autopsy failed to reveal any specific pathology that could be indicated with regard to the failure of these organs to undergo a diuresis and function properly. Under these circumstances, a transfusion reaction cannot be absolutely ruled out, but such seems unlikely in this particular patient.

Undoubtedly an occasional patient may demonstrate renal failure without apparent cause (as in the latter example) but the majority of early deaths following severe burns can be attributed to inadequate replacement therapy; inadequate in terms of quantity and composition of the "balanced replacement."

Good experimental evidence supports the apparent clinical benefits of whole blood transfusions in the therapy of severely burned patients. In 1952 Quinby and Cope published studies of red cell destruction during burn trauma, assessed through the use of tagged red blood cells made radioactive with radioactive iron and chromate. They reported destruction of 7 per cent to 10 per cent of the red cell mass in a patient suffering from a 35 per cent full-thickness burn. However, it must be recognized that the loss of red cell mass is small compared with the more massive losses of plasma.

In the absence of blood transfusions early in the postburn period, an anemia of greater or less severity results. Use of whole blood to account for one-third to one-half of the initial colloid requirement provides early compensation for loss of red cell mass as well as combating shock. We have never seen untoward hemoconcentration as a result of this therapy.

In the latter stages of therapy, during reconstructive surgery, whole blood is absolutely vital if hemoglobin is to be maintained near optimum levels. The importance of an adequate red cell mass to the healing of extensive wounds is well known. In adult patients free of cardiac complications, the hemoglobin should approach 15 gm. per 100 cc. assessed during an adequate state of hydration.

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Editorials

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R. R. ROSELL RETIRES

On the first of the year, R. R. Rosell, executive secretary of the Minnesota State Medical Association, will retire after many years of outstanding service not only to the State Association, but to the organized profession of the North Central states.



Since he became executive secretary in 1938, succeeding Dr. E. A. Meyerding, it can be truly said that Mr. Rosell, best known to his many friends as "Rosie," has been the center of the Association's activities.

Born in Minneapolis, Mr. Rosell attended the public schools and was graduated from the Engineering School of the University of Minnesota just before the outbreak of World War I. He accepted a commission with the Army Engineers when the United States entered the war and spent most of his time in service helping to run a munitions plant on the East Coast. He had planned to return to engineering after the war, but his capacity for organization had been noted, and he went to work instead in the newly created program for the rehabilitation of veterans. Under the direction of Dr. William H. Dunwoody of

Minneapolis, he travelled all over the country in his new job.

Later, Mr. Rosell established a rehabilitation program for the Hennepin County Tuberculosis Association. Later still he was associated with the Minnesota Public Health Association, the Christmas Seal organization of the state, at a time when this organization and the Minnesota State Medical Association were under the joint executive direction of Dr. E. A. Meyerding.

In 1930, Mr. Rosell left Minnesota for several years to carry on a nutrition program of national scope under the sponsorship of the milling industry and the American Medical Association.

In 1935, he returned to Minnesota and for a brief period was a regional director of the WPA before he returned to the State Medical Association in 1936 as Assistant Executive Secretary in association with Dr. Meyerding. In 1938, upon the resignation of Dr. Meyerding, Mr. Rosell became Executive Secretary, one of the early lay secretaries of the state medical associations.

The employment of full-time lay executive secretaries for state medical associations and for some of the larger county medical societies has become more usual during the past two decades and has offered these lay secretaries the opportunity to exert considerable influence on medical organizations and in various activities having to do with public welfare. Mr. Rosell was well suited to do just this and proved his ability as an administrator in the handling not only of lay individuals but of members of the medical profession who are proverbially known as individualists in the extreme.

Back in 1927, under the presidency of Dr. William F. Braasch of Rochester, the State Association officers, notably Dr. Braasch and Dr. Charles B. Wright of Minneapolis, became concerned about the social and economic outlook for medicine and invited representatives of the medical associations of Wisconsin, Iowa, North Dakota, and South Dakota to meet in the Twin Cities with officers of the Minnesota State Medical Association to discuss informally such subjects as

ROTUNDOPHILIA

If you're looking for editorial comment about reducing diets or the need therefore, skip this. This has to do with round numbers.

We have run into vigorous objections to imprecise statistics, but in general we hold with the school of round numbers. Much can be said on each side. For example, the proponents of accurate numerical quotations (79.98 per cent of patients . . . rather than 8 out of 10) tell of the hen who observed time and again that the appearance of a *man* was followed by her finding corn on the ground outside the hen house. Being a scientific type of hen, she tabulated her results. In truth, for 999 times in succession *man* appeared and Lo, there was corn for the hen! Being also addicted to the scientific tendency to stick to actual numbers, and the avian and human tendency to gather statistics in rotund groups, like an even thousand, she waited for the 1000th appearance of *man*. It came. She went out to verify the presence of corn, but instead, *man* seized her and wrung her neck for his supper. This is the sort of thing that would discourage the rounding off of numerical data. Further, the proponents of precision, *vs.* rotundity, point out that Methuselah's age at death (969 years) is ponderously convincing because of its precision—no "almost a thousand years" for them.

On the other hand, who hasn't met the engineering student whose survey of tunnels in a mine drift didn't read "length 143 feet and 9 inches" when everyone except, hopefully, the prof knew that this precision was merely putting a badge of pseudo-accuracy on a canny guess? This is not to say that the precise statistician is always veneering his numbers with a specious accuracy, but there are times when results to the Nth decimal place give the practical man such an impression.

And so back to our original statement that, in general, round numbers would seem to suffice for most clinical statistics, if for no other reason than that "three-fourths" or even "75 per cent," communicates a thought much more easily to most people than does "73.68 per cent."

H.G.M.

medical costs, distribution of physicians, encroachment of government on medical practice, and the like. This conference became known as the Northwest Medical Conference and met yearly in St. Paul until 1936, when its membership having spread to include representatives of state associations in the East and South, Chicago was selected as its meeting place, and Mr. Rosell continued to act as secretary.

In 1940, the name of the conference was changed to the National Conference on Medical Services. Dr. A. W. Adson and Dr. W. L. Burnap were ardent advocates in the National Conference of a stronger national legislation policy and the establishment of an office of the American Medical Association in Washington. They seemed to make little headway with the idea and, in 1942, established what was called the North Central Medical Conference with representatives from the medical associations of Wisconsin, North Dakota, South Dakota, Iowa, and Nebraska, as well as Minnesota, which met annually in St. Paul with Mr. Rosell as secretary. Action of this group favoring the establishment of an AMA office in Washington, transmitted to the National Council on Medical Services, led to the setting up of a Washington office under Dr. Joseph Lawrence in 1944.

Mr. Rosell has been the executive secretary of the North Central Medical Conference from its inception in 1942 until 1958 and has done a splendid job in managing programs and entertainment for the visitors.

All this activity was in addition to his duties as Executive Secretary of the Minnesota State Medical Association, which in itself is a strenuous job. For his outstanding service to the Association over the years, "Rosie" was presented with a well-deserved citation at the banquet held in connection with the annual meeting in Minneapolis last May.

In spite of a coronary attack sustained while attending the AMA meeting in New York in the summer of 1957, "Rosie" again carried on following a brief vacation.

The first Mrs. Rosell died in the late forties. Their son, Rufus Roger, Jr., lives in Minneapolis. In 1951, "Rosie" married Dorothy Stuber and they live at 2138 S. Rosewood Lane in St. Paul. It is the wish of his many friends that the Rosells will have many years of a happy and less strenuous existence allotted to them.

CARL B. DRAKE, M.D.

ADRENOCORTICAL STEROIDS

Those of us who have been privileged to practice the art of medicine over the past two decades have witnessed advances in the field of therapeutics which our forebears would have regarded as miraculous. Some of these advances, particularly the antibiotics, have been curative. Others, such as the adrenocortical steroids, have been suppressive or "rehabilitation" agents. These compounds have permitted many whose activity has been limited by arthritis or severe dermatologic and allergic conditions to return to gainful employment or active retirement.

Ten years ago, Hench and his co-workers at the Mayo Clinic demonstrated the marked anti-inflammatory activity of cortisone in the treatment of rheumatoid arthritis and rheumatic fever. Since that time, we have utilized hydrocortisone, prednisone, prednisolone, and more recently methylprednisolone and triamcinolone. Perhaps then, at the end of this first "adrenocortical decade," we should take off our rose-tinted glasses and look objectively at these highly potent therapeutic compounds with their edge of physiologic side effects.

The search for new adrenocortical steroids, by chemical manipulation within the ring structure, has become a highly specialized and aggressive form of research. Each year, large numbers of such compounds are produced and screened within the laboratories. What screens are used to indicate the potentialities of a new corticosteroid? Briefly, and avoiding detail, one might say that the following criteria are basic in such an investigation.

	Screen	Ideal
Major	Anti-inflammatory activity Sodium retention	High Absent
Minor	Diabetogenic Effects Catabolic Activity Adrenocortical Suppression Ulcerogenic Activity	Absent Absent Absent Absent

Of the above, there can be no doubt that a high degree of anti-inflammatory activity combined with minimal or absent sodium retention is mandatory. The other side effects are only of importance if these preceding criteria are met. Let us now assume that a compound has successfully negotiated the laboratory's screening procedures and has been shown experimentally to have a high degree of anti-inflammatory activity with minimal

This is the first of four editorials on steroid therapy.

or absent side effects as indicated by biological screening. Our next efforts must then be directed toward its clinical investigation. Here many problems arise for we must face the fact that man is not a laboratory animal. The results of animal experimentation are, at the best, only a guide and should be regarded as such. Many compounds which have created enthusiasm in the laboratory have been failures when applied clinically.

How long does it take to evaluate thoroughly a corticosteroid in the clinic? A year, two years, perhaps even longer? None of us can firmly answer that question. To show efficacy is one thing, to determine ultimate clinical acceptability is another.

How then do the new corticosteroids compare with the parent compounds cortisone and hydrocortisone? DiRaimondo and Forsham recently indicated this in their table published in *Metabolism*, January, 1958, as follows:

Drug	Anti-inflammatory Effect	Sodium-retaining Propensity
Cortisone	0.8	1.0
Hydrocortisone	1.0	1.0
Prednisone	2.5	0.8
Prednisolone	3.0	0.8
Triamcinolone	3.0	0.0
Methylprednisolone	4.0	0.0

One has only to review this table to see that over this past decade we have moved forward a long way. We now have available a corticosteroid with four times the anti-inflammatory ability of the parent compound hydrocortisone. At the same time, the sodium-retaining propensity has been removed so that long-term therapy, as far as these criteria are concerned, is now a reality.

JOHN J. PEPPER, M.D.

NUCLEAR POWER IS SAFE Electrical Industry

"The place I'd set up my cot and go to sleep with absolute confidence would be on top of a Hanford reactor," Dr. Norman Hilberry, atomic scientist, said recently.

"A nuclear reactor and an atomic bomb are two very different things. The possibility of a bomb-like nuclear explosion occurring in a reactor is so remote as to be essentially non-existent," Atomic Energy Commission experts say.

"There is less than one chance in 50,000,000 of getting killed in any year in a nuclear reactor accident," says the AEC. Compare this with the odds

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of one chance in 5,000 of death in an automobile accident in the course of a year.

Since the discovery of nuclear energy, exploring and improving its safe use as a source of electric power has been an everyday activity of the electric industry. More than \$400 million is now invested by electric companies all over the nation in the building of fourteen nuclear power reactors of many types and designs.

The Atomic Energy Commission reports that "nuclear reactors have been operated since December 2, 1942, with a safety record better than that of other industry." A remarkable record of employe safety has been chalked up. In a total of 18,000,000 man-hours of work at nuclear reactor locations, there have been "no accidents involving contamination of off-site property or radiation injury sufficiently serious to cause any lost time of personnel."

Safety is always a first consideration of the electric industry. Under the strict regulation by the Atomic Energy Commission, safety is being "designed into" nuclear power plants. Every possible danger is being anticipated in the building of nuclear reactors.

Every electric company building a reactor analyzes its design and operation in every detail, always keeping safety in mind.

DON UNDERWOOD

THE PASSENGER PIGEON

When the first settlers came to Minnesota, the passenger pigeon was a common, indeed, a phenomenally abundant, summer resident in this part of the country. This bird should not be confused with the homing or carrier pigeon, which is a variety of the domestic pigeon, or with the mourning dove, which is a smaller bird by from four to six inches and which is still an abundant summer resident in Minnesota and throughout most of North America.

The wild pigeon, as it was called, arrived in immense flocks early in the spring and again in the autumn. Competent observers have estimated the flocks in terms of millions and even as high as two billion birds. Its nesting sites or roosts were almost always in extensive areas of hardwood where food was abundant. Normally the food of the pigeon was acorns, nuts, seeds of elms and maples, berries, weed seeds, caterpillars, grasshoppers, angleworms, and snails. The passenger pigeon was a gregarious bird. It travelled in flocks,

it fed in flocks, it nested in flocks, it was exterminated in flocks. Pigeon roosts often covered several hundred or even thousands of acres. It was not uncommon to find ten or more nests in a single tree and cases are cited of trees actually collapsing from the sheer weight of the numerous nests.

At the time Minnesota became the thirty-second state in the Union, the process of extermination of the passenger pigeon was at its height. As the woods and prairies were converted into cultivated fields and its natural food supplies were depleted, the bird became a veritable pest to the farmers during both seeding and harvest. It is small wonder that the farmers, who saw their precious seed picked up faster than they could sow it and who watched the pigeons roll over the fields in droves, taking most of the harvest, used every possible means to protect themselves against the advancing hordes. Both the adults and squabs were highly prized delicacies in the eastern markets. The squabs could be easily obtained by jarring a small tree, felling a larger tree, or even setting fires below the nesting trees. The nest was a fragile structure, a mere platform of twigs loosely put together. Only one egg was laid, though the pigeon commonly nested twice in the season and occasionally three or four times. Shipping records reveal consignments of birds both by water and by rail that totaled close to two million birds in a single summer.

By the time the efforts of naturalists to bring an end to this slaughter had become effective in protective legislation, the remnants of the pigeon flocks were too far decimated to cope with the forces of nature, and, with almost dramatic suddenness, the passenger pigeon had disappeared from among American avifauna. Dr. Roberts, in *The Birds of Minnesota*, gives 1895 as the date for the last reliable record in the state of a nesting bird, one taken near Minneapolis. Elsewhere, isolated cases of passenger pigeons were reported sporadically during the next decade. A few captive birds were unable to rear sufficient young and the small flock steadily decreased. The last surviving bird of the once spectacular hordes died on September 1, 1914, in a Cincinnati zoo.

The disappearance of the passenger pigeon has been the subject of much controversy among different groups. From the maze of opinion, theory, and emotion, it is possible to distinguish several contributory factors. The extent to which each hastened the final disappearance of the pas-

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senger pigeon cannot be determined with certainty but the combination of them all brought doom to one of America's and Minnesota's beautiful and valuable birds. Undoubtedly, man's warfare upon the bird on its nesting sites, coupled with the bird's gregarious habits and single-egg brood proved to be an insuperable handicap in the way of survival. The cutting of the forests and the destruction of its natural food and nesting sites were potent factors in its disappearance, and disease and the elements of the weather may also have contributed to the speed with which it vanished.

Legislation alone will not save a species from extinction and often comes too late to be effective. The conservation of our natural resources must be the concern of every public-minded citizen. As we in Minnesota stand on the threshold of a second hundred years, it is to be hoped that we shall learn from the failures of the past to exercise a more faithful stewardship of the bounty that is ours.

SISTER ST. MARK WIRTZ, M.S.

ECONOMIC CONSEQUENCES OF TELEVISION TEACHING

Earlier articles in this series have shown that teaching by television is highly effective teaching indeed. The facts that by 1970 we shall have twice as many students in our classes but that it is impossible to double the number of qualified teachers within the next twelve years have also been noted. There is an obvious relationship between these matters. If, as is entirely possible, one teacher, by television, can teach thousands of students without loss of educational attainment on the part of the students, then we may be on the way toward solving the present critical shortage of teachers and the even more menacing future shortage.

It should be noted, however, that educational television is by no means a panacea for all our educational problems. To begin with, an educational station has only about 100 hours a week at its disposal for educational purposes. This time must be divided between pre-school children, all twelve grades, the needs of colleges and universities and the demands for adult education. It is obvious that the available time on these stations will have to be very carefully budgeted to serve the most critical needs. In Pittsburgh, for example, all available time on the educational television

station has long since been taken up. The non-profit corporation which operates the station is now applying for an unused UHF channel which, in effect, will put a second educational television station into the Pittsburgh area simply to take care of the tremendous demands for educational time. Similar demands will doubtless soon be heard in Chicago, St. Louis and the Twin Cities.

Under these circumstances, it should be obvious that educational television is not a device for the displacement or replacement of teachers. We will need to keep all the teachers we have and to recruit all we can get, *plus* maximum use of educational television, if we are simply to maintain our present standards of education, let alone improve them.

In certain subject areas, however, the role of the educational television station is vital. For example, some 25 per cent of all the high schools in the United States offer no courses in physics, chemistry or mathematics beyond the ninth grade level. The reason for this is that the limited supply of capable physicists, chemists and mathematicians is usually snapped up by industry at salaries far beyond the reach of the high schools. This, in turn, may mean that there will be even fewer physicists and chemists in the future than we have now. Yet, in Pittsburgh, one highly gifted teacher of physics is now serving, by television, some thirty-one different school districts simultaneously. The students who take the course by television do better work, as measured by examination, than those studying in the conventional way. Moreover, the students apparently enjoy the experience and enrollments for the second year of this experiment have far exceeded the expectations of the educators. The teacher, Dr. Harvey White, expresses himself as more than satisfied with the experiment. White, incidentally, is paid \$15,000 a year for teaching on television. This figure is noteworthy because it makes White the highest salaried school teacher in the United States. This, in turn, is important because with the cost of the television time, White's salary, the cost of all materials, study guides and all other costs, the total bill to each of the school districts averages less than \$2000 a year. This figure is about one-third the cost of supplying a merely average teacher for this subject, if it were possible to find such a teacher.

A similar calculation for the cost of supplying foreign language instruction by television for the elementary schools in Ramsey and Hennepin

Counties, which included the cost of the television time, an above average salary for the teacher, plus all other costs, resulted in a figure of something under seventeen cents per lesson, per school. Obviously, this is high quality instruction at almost negligible cost. The impact of this on taxpayer groups is obvious.

In conclusion, then, educational television can and should be used to supply educational needs which cannot be met so well any other way and which, in some cases, cannot be met at all in any other way. It is important to note that the cost of this instruction is extremely low and that the quality of the instruction can be very high indeed. An educational television station thus becomes a most valuable economic asset to any community which it can serve.

JOHN C. SCHWARZWALDER

SCHOOL HEARING PROGRAMS

Early discovery of hearing loss through audiometric testing is the heart of school hearing conservation programs described by Hayes A. Newby, Ph.D., of Stanford University, in a twelve-page article in the September issue of *Hearing News*, American Hearing Society publication.

Other primary facets of a hearing conservation program include medical follow-up of children having remediable hearing losses, and special education to enable those with permanent auditory impairment to obtain maximum benefit from their schooling.

Incidence of hearing loss is estimated at from 5 to 10 per cent of the school population. Of that number many will respond to medical treatment, while only about 1 per cent of the children will have hearing loss of a handicapping nature.

Dr. Newby points out that implications of hearing conservation programs go far beyond the immediate gains to the individual child in discovering and handling his hearing problem. Early discovery of hearing loss and follow up, as indicated, is "economically advantageous to a community and to the country as a whole."

Reprints of "School Hearing Conservation Programs" are available at 35 cents a copy. Write: American Hearing Society, 1800 H St., N.W., Washington 6, D. C.

COSTS OF LIVING VERSUS OTHER COSTS

Living costs have gone up an average of 105 per cent in the twenty years between 1938 and 1958, according to U. S. Government Cost-of-Living Index. This means that one would have to pay \$205 now for what would have cost \$100 in 1938.

Other costs are indicated as follows. Rent has gone up 60 per cent; doctors' fees, 84 per cent; men's clothing, 110 per cent; automobiles, 125 per cent; food costs, 151 per cent; baby shoes, 171 per cent; men's haircuts, 206 per cent; hospital costs, 300 per cent. Most of this is attributed to labor costs.

BRONCHO-PULMONARY SEGMENTAL ANATOMY AND BRONCHOGRAPHY

(Continued from Page 830)

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President's Letter

PROGRESS REPORT—CENTENNIAL YEAR

There is an old saying "Happy is the Nation without a history." Medicine in Minnesota had a history this year but it is not unhappy about it. Last fall the Asian influenza scare appeared, but with the aid of Dr. Robert Barr of the State Board of Health, the hazards were easily surmounted. There was no increase in government medicine in this state as a result of the wide vaccination program, and the influenza epidemic was relatively well controlled. Poliomyelitis this year was mild, mostly as a result of the intensive vaccination effort of two years ago and the continuing effort of the doctors of the State to maintain and widen the immunization of Minnesota citizens. At the State Fair in August, the State Medical Association established a booth for first immunization doses against polio in adults. That this was successful is due to the efforts of Harold Brunn of the State Office and the manning of the booth by members of the Minnesota Academy of General Practice with the aid of volunteer registered nurses and Hennepin County group of the Council of Jewish Women.

The annual meeting of the Association in May was successful, especially in that there was a record number of intensely interesting scientific exhibits. Immediately after our annual session was the Tenth Anniversary Meeting of the World Health Organization, the first in the United States. According to national authorities, the hospitality of the people of Minnesota was an outstanding contribution to international goodwill and, in fact, is said to have changed the attitude of whole nations in the middle and far East toward the United States.

In October, the North Central Conference of Medical Associations met in Minneapolis. This is an annual event, usually meeting in St. Paul. At this conference, one half the session was devoted to voluntary health insurance. This type of insurance seems at this time to be the best answer to the proposals moving toward government control of medicine. Insurance programs are having their troubles, especially major medical policies which are running into over-usage and occasionally exorbitant medical bills. If these voluntary insurance policies are confronted with too exaggerated hospital and medical expenses, they will be priced out of the market and the almost inevitable result will be the substitution of federal control of hospital and medical costs with all that that implies.

Throughout the year there have been hearings by the Interim Committee of the Legislature on osteopathic practice. One might say that these have been interesting.

Early December brought the Clinical Meeting of the AMA to the State. The last previous time the AMA held a meeting in Minneapolis was in 1927.

One unhappy event occurs at the end of this year. R. R. Rosell is retiring as Executive Secretary of the Minnesota State Medical Association. He has been the prototype of the good executive secretary and has set the standard for that position throughout much of the country. All of us who have known him and have watched him work have not only the utmost respect for him, but the deepest fondness personally. We shall all miss him, and as he retires, our best wishes follow him for an active and happy life.

Harold Brunn has been promoted from Assistant to Executive Secretary to take office the first of January, 1959. He will be a worthy successor to Mr. Rosell. To them and to the whole staff we owe much.

And now, in closing this last President's letter of 1958, I wish to express the appreciation of the honor given me. It has been a broadening and, indeed, an exciting experience, one never to be forgotten. We have met many problems, solved a few and foresee many more. It is only the co-operation of many, many physicians that makes medicine the respected, outstanding profession it is today and the Minnesota State Medical Association, the spokesman and co-ordinator for the profession.

Horatio R. Sweetser

President, Minnesota State Medical Association

Medical Economics

Edited by the
Committee on Medical Economics,
Minnesota State Medical Association
George Earl, M.D., Chairman

RECORD ENROLLMENT IN MEDICAL SCHOOLS CITED

A record total of 29,473 students were enrolled in American Medical Colleges in 1957-58.

Major construction in the planning, beginning, or completion stages costing 47 million dollars was reported by sixty of the eighty-five operating medical schools.

Forty-nine schools reported major developments and changes in administrative organization, methods of student selection, curriculum, and financing.

As estimated, the sum of 275 million dollars was spent by the medical schools in 1957-58, an increase of 13 per cent over the preceding year.

These were among the many facts and figures in the fifty-eighth annual report on medical education by the American Medical Association's Council on Medical Education and Hospitals. The ninety-page report appears in the November 15 issue of the *Journal of the American Medical Association*.

The report illustrates some of the changes and developments being made in medical schools to meet the changing medical needs of the American people.

It also noted the AMA's continuing support in developing additional facilities for basic medical education. "The increasing population together with various other facets of the shifting (population) pattern obviously indicate the need for constantly increasing the number of physicians," the report said.

Facility—Curriculum Revisions Necessary

This means that existing medical schools must consider expanding their facilities, and institutions of higher education without medical education programs need to give serious consideration to the development of medical programs.

Major developments in curriculum and teaching methods were reported at several schools. These include a plan at Duke University to produce physicians who are also skilled medical research scientists; a greater emphasis on education methods for medical teachers at the University of Buffalo,

and an experimental program at the University of Pittsburgh whereby medical students may adapt their medical education to one of the specific fields of research, clinical specialties, or general practice.

Medical School Graduates Increasing

There are seventy-eight approved four-year medical schools in the United States, along with four two-year schools of basic medical sciences. In addition, three newly developing schools have provisional approval by the AMA Council and will be graduating students within the next few years. Ten years ago there were seventy-seven schools including seven two-year schools of basic medical sciences.

A total of 6,861 physicians was graduated from the seventy-eight schools in 1958, as compared with 6,796 in 1957. The record year for graduates was 1955 with 6,977.

A new record was established in 1957-58 for the number of entering freshman—8,030. The preceding year the number was 8,014, and ten years ago the number was 6,487.

The report also showed that 1,644 women were enrolled in medical schools, and 355 were graduated in 1958. Women's Medical College, Philadelphia, enrolls only women, while Dartmouth and Jefferson enroll only men.

Of the seventy-two schools reporting that the supply of cadavers used for teaching anatomy was probably adequate for the needs of first-year students, thirteen reported an insufficient supply for the more advanced students. The other thirteen reported a "frankly inadequate supply." The report urged more states to give legal recognition to individual bequests of bodies to medical schools.

Financial Aid Increased

The American Medical Education Foundation raised \$984,787 from physicians for medical schools in 1957. The National Fund for Medical Education, which received its money from industry, contributed \$3,078,825 to the medical schools in January, 1958.

The median annual cost of medical school to

a student, including tuition, minimum board, room, and supplies, in a private institution was \$1,958. In a state-owned school, the cost was \$1,395 to a resident of the state and \$1,731 to a non-resident.

The median amount of money spent by a four-year school during 1957-58 was between 2.3 and 2.4 million dollars.

Enrollment Limited in State-Owned Schools

The survey of medical schools this year showed that only seven—all state-owned—limited their first-year enrollment to residents of the state in which the school was located. This is a drop of schools from the preceding year.

However, the publicly owned schools had only 4 to 9 per cent of their students from outside the state in which each school was located. As a consequence, the publicly owned schools had only one-fourth to one-fifth as many applicants as did privately owned schools, the report said.

Although the proportion of the total number of students entering classes enrolled in each kind of school was about equal, the number of students lost to medicine by poor scholarship during the first year was significantly larger in each of the past four years in publicly owned schools.

The report said the problem is that their geographic restrictions on residence limit applications by, and choice of, as many highly capable students on the part of publicly owned schools as are turned away by the geographically non-restrictive privately owned schools.

The report expressed the hope that state legislators and other public officials concerned with these matters will co-operate with university and medical school administrators "in bringing the policies restricting admissions into a more realistic and socially useful focus."

Canadian Medical Schools Flourish

The report included extensive information about Canadian Medical schools. There are twelve four-year schools, enrolling a total of 3,686 students. They graduated 828 physicians in 1958.

There are eighty-two United States citizens enrolled in the first medical year in Canadian schools as compared with four Canadians enrolled in the first-year classes of United States schools. The report pointed out that this favorable balance of seventy-eight Americans in the first medical year of Canadian schools represents the "equivalent of

another United States school having a class size larger than that of twenty-eight of the United States medical schools."

WILL THE EIGHTY-SIXTH CONGRESS WRITE THE PRESCRIPTION FOR GOVERNMENT MEDICINE?

With the results of the November fourth elections now in, an analysis of their probable effect on medical legislation during the Eighty-sixth Congress convening January 7, 1959 is in order. Top-heavy Democratic majorities in both the House and Senate make policy decisions of the Democratic leadership of key importance in medical as well as all types of legislation. Equally important, the make-up of all committees will be markedly altered.

In the Senate, for instance, when the margin was forty-nine Democrats to forty-seven Republicans, Senate committees were closely divided. With the Democrats picking up a record gain of thirteen seats in the Senate, committee composition may run as much as ten to five or nine to six in favor of the majority party. (Under the Reorganization Act of 1946, each Senator is assured of two committee assignments; thus twenty-six new places have to be found on Senate committees in January.)

Legislation rarely gets to the floor for a vote unless some committee sends it there. Majority policy sometimes becomes stalled when a committee, for various reasons, finds itself in disagreement with that policy.

Selections to committee are made differently in each house and by the parties. In the Senate, the Democrats make appointments through the fifteen-man Steering Committee headed by Majority Leader Lyndon Johnson; other members are Mansfield, Hennings, Chavez, Elender, Frear, Russell, Hayden, Holland, Humphrey, Pastore, McClellan, Robertson, and Johnston (S. C.). The Republicans in the Senate use a five-man Committee on Committees that was made up in the Eighty-fifth Congress of Senators Knowland, Bricker, Saltonstall, Bridges, and Dirksen. In the House, the Democratic Committee on Committees is made up of all Democratic members of the Ways and Means Committee. The Republicans will constitute a Committee on Committees in January, made up of one member for each Republican state delegation and with House Minority Leader Martin as chairman. With this background, let's examine

the composition of committees in both houses which are most concerned with medical legislation.

House Ways and Means

A committee of major importance to physicians is the House Ways and Means Committee under Chairman Wilbur Mills (D., Ark.). Its membership for several years has been divided—fifteen Democrats to ten Republicans. In the Eighty-sixth Congress, the committee will be considering legislation that would impose, on a compulsory basis, hospitalization and medical care benefits for retired social security recipients and their dependents. The committee also is expected to consider amendments to public assistance laws which in large measure are evolving into medical programs for the indigent. Keogh legislation to permit self-employed persons to establish annuities with deferred taxes will again be considered by Ways and Means.

At least seven of the present members of the committee will not serve in the new Congress. Their loss to the committee can be attributed to one death, a decision by four not to seek re-election to the House, and defeat of two at the polls in the November fourth elections. The men who succeed these seven could shape the entire philosophy of the committee. There is a further possibility that the committee will be even more heavily Democratic; it is quite possible that it will have a line-up of seventeen or more Democrats to eight or less Republicans.

Senate Finance Committee

In the Senate, the Finance Committee is of importance to the medical profession. It is the counterpart of the Ways and Means Committee in the House. Its chairman is Senator Harry Byrd (D., Va.). At present, the committee is composed of eight Democrats and seven Republicans. It is certain that three Republican members will not serve in the Eighty-sixth Congress; two retired from the Senate, and one was defeated in the recent elections. Because of the overwhelming majority in the Senate (sixty-two to thirty-four), the Finance Committee makeup quite possibly will be changed to nine or more Democrats, to six or less Republicans.

This committee has been considered in the past to be a middle-of-the-road group. With the appointment of new members, both Republican and

Democratic, this group's attitude on health legislation could be altered.

House Interstate and Foreign Commerce Committee

Another committee of importance is the House Interstate and Foreign Commerce Committee, under chairmanship of Rep. Oren Harris (D., Ark.). For several years, it has been made up of eighteen Democrats and fifteen Republicans. In the coming Congress, the committee will be considering such matters as amendments to the Hill-Burton Hospital Construction Act, federal aid to medical schools, expanded medical research programs and food and drug legislation.

Many of the present members of the committee, including the top ranking three Republicans and the only physician serving on a committee concerned with health legislation, will not serve in the next Congress. Either they did not seek re-election or they were defeated at the polls. On the Democratic side, this was true of at least two members. When Congress organizes in January, the ratio of members will be changed from the present eighteen Democrats and fifteen Republicans by adding as many as three or more Democrats, and by reducing the Republican membership by a similar number.

Senate Labor and Public Welfare Committee

According to the American Medical Association Washington Letter, a fourth important committee to physicians is the Senate Labor and Public Welfare Committee whose chairman is Senator Lister Hill (D., Ala.). This committee handles major health legislation, and in addition has jurisdiction over some veterans' matters where medical interest is involved. Its present membership is seven Democrats and six Republicans.

The top-ranking three Republican members will not serve in the Eighty-sixth Congress either because of their decision not to seek re-election or because they were defeated. Here, again, the party-line-up may be changed so that when the Senate organizes they may be one or more Democrats added to the committee membership and a similar decrease of Republic members. The philosophy of the committee could conceivably be altered with the appointment of Republicans to replace vacancies on the committee.

FORAND BILL A LABOR "MUST" FOR NEXT SESSION

A pamphlet just issued by the AFL-CIO confirms that labor's national leadership is moving the Forand bill high up on its priority list of bills it wants passed in the next session of Congress. The booklet, "Labor Looks at the Eighty-fifth Congress," is mainly a review of the last two years, but it also looks ahead. It locates the Forand bill as fourth of seventeen legislative objectives next year, declaring that labor will work for enactment, "through the social security system," of a program of "hospital, nursing home and surgical care for those receiving benefits." The booklet was prepared by the AFL-CIO's legislative department, headed by Andrew J. Biemiller, former Democratic Representative from Wisconsin.

Only objectives ranked higher on the list are "complete overhaul of the Taft-Hartley act," legislation to "safeguard unions from racketeers and from improper activities" on the part of both labor and management, and extension of the fair labor standards act and an increase of the minimum wage to \$1.25 per hour.

The Forand bill would provide hospitalization and surgical care for all social security beneficiaries. Last session, it was among social security changes on which hearings were held by the House Ways and Means Committee, and was the subject of considerable discussion, but was not included in other provisions reported out by the committee. On the committee's instructions, the Department of Health, Education and Welfare is making a comprehensive study of the financing of medical care for the aged.

KEOGH BILL ACTION PLANNED

A plan of action to obtain passage next year of the Keogh bill has been approved by the executive committee of the American Thrift Assembly and presented to the Assembly's board. ATA already is at work contacting candidates for Senate and House.

ATA was formed by a number of professional groups interested in the legislation, including the AMA. The bill would allow the self-employed to defer income taxes on a certain percentage of their earnings if placed in retirement plans. The blueprint for operations next year was drawn up by a special committee appointed by ATA's executive committee.

Active in the work were Dr. William J. Kennard, representing the AMA; Milton F. Lunch, National Society of Professional Engineers; Donald E. Channel, American Bar Association; Lyman Bryan, American Institute of Certified Public Accountants; and Al Payne, National Association of Real Estate Boards. In sending the proposed plan to members of ATA's board, ATA Chairman F. Joseph Donohue wrote:

"The favorable action on the bill in the last session raises our hopes for complete success in the coming session of the Congress. The discussion of this measure on the floor of the House prior to its passage, as well as the later debate on the floor of the Senate before it was ruled 'out of order' as not 'germane' to the bill to which it was sought to be attached by way of amendment by Senator Potter, has pointed to our areas of strength and to our areas of weakness. It is on the latter we hope to concentrate."

OSTEOPATHS DROP FOUNDER'S NAME FROM CONSTITUTION

The American Osteopathic Association agreed by a 105 to 16 vote at its annual meeting in Washington to drop from its constitution the name of its founder, Dr. Andrew Taylor Still. In his presidential address, George W. Northrup, D.O., said the AOA desires to co-operate with all other agencies responsible for health services but that the solutions of AOA problems "will not be solved by placing our future in the protective custody of any other organized body." In any event, he said, medicine in general and osteopathic medicine in particular can no longer exist as "an isolated island in society."

STATE REACTIONS TO MEDICARE VARY

Two states have recently taken action regarding Medicare, one pro, one con.

Only three months after signing a new contract with the government, Oklahoma Medical Association has divorced itself from the Medicare program. Action was ascribed to free-choice abridgment and benefit cutbacks which became effective October 1. Medicare officials deprecate the withdrawal as a step based on misunderstandings.

At its annual meeting, September 20, New Hampshire Medical Society voted on the question of terminating participation in Medicare program. The decision, by a vote of 28 to 11, was to retain the program.

Predictions are that negotiations by correspondence will replace the present practice of on-the-spot bargaining sessions with state associations next year.

IN DEBILITATING DISEASE



Patients receiving

NILEVAR®

Eat more...

Feel better...

Recover faster

Compared to control patients, those receiving Nilevar (brand of norethandrolone) have repeatedly demonstrated more rapid and more complete recovery from serious acute illness and increased comfort and well-being in chronic illness.

A multitude of case histories are now adding individual clinical color to the earlier controlled investigations which defined the actions of Nilevar as an effective aid in reversing negative nitrogen balance and in building protein tissue.

In typical case reports such gratifying comments as these appear:

Underweight — "Appetite considerably increased within one week. Sense of well-being and vigor increased along with increased appetite."

Prematurity (Birth weight: 2 pounds, 4 ounces) — "Gradual improvement in appetite and capacity for formula. . . . Excellent progress and weight gain for a very immature infant."

Carcinoma of the Uterus — "Within four days appetite became excellent, took full diet. . . . More ambition while on Nilevar. Enjoys life. Takes part in church and other social affairs."

Third Degree Burn — "... soon began eating all that was offered. . . . Began to show signs of hope for recovery. . . . Perhaps one of the greatest changes was in the appearance of his wounds which were so very much improved."

The dosage for adults is 20 to 30 mg. daily in single courses no longer than three months. For children the daily dosage is 0.5 mg. per kilogram of body weight, in single courses no longer than three months.

Nilevar is supplied in tablets of 10 mg. and ampuls of 25 mg. (1 cc.).

G. D. Searle & Co., Chicago 80, Illinois. Research in the Service of Medicine.

SEARLE

MINNESOTA BLUE SHIELD-BLUE CROSS

Minnesota Blue Shield completed its eleventh year of operation on October 31, 1958. This fact prompted a review of the improvements in Blue Shield coverage since the program has been in operation.

Not only does the Blue Shield contract now carry allowances for many more services of doctors of medicine than it did originally, but many of the original allowances have been increased. The Plan A fee schedule has been converted from what is known as a \$150 to a \$200 surgical schedule, waiting periods for tonsillectomies and adenotomies and for pre-existing conditions have been reduced from ten to nine months, and a new contract, Plan B, with fees averaging approximately fifty per cent more than those of Plan A, has been made available to the public.

eligibility for obstetrical care allowances also has been reduced from ten to nine months.

Blue Shield coverage has been further broadened by the additions of allowances for x-ray therapy and radioactive isotope services.

Altogether, more than 250 additions and improvements have been made in the fee schedule which originally had approximately 1,000 items. The majority of these changes have resulted from the suggestions and recommendations of representatives of different specialty groups and other physicians. All of them demonstrate the Board of Directors' persistent desire to broaden and improve the coverage of the Blue Shield contract.

The rate of hospital admissions for Blue Cross subscribers continued its record breaking pace through the third quarter of 1958. As of Septem-

PATTERN OF SHORT STAY MEDICAL CARE CASES PAID

By Length of Stay

Length of Hospital Stay	Respiratory System Diseases	Digestive System Diseases	Circulatory System Diseases	Genito-Urinary System Diseases
One day	7.0%	12.0%	6.0%	13.0%
Two days	9.0%	20.0%	6.0%	18.0%
Three days	14.0%	16.0%	8.0%	14.0%
Four days	13.0%	11.0%	7.0%	10.0%

In-hospital medical care allowances are now available for 180 days of such care instead of twenty-one days originally provided by the contract. Emergency and intensive in-hospital medical care benefits have been added, and the fees for the first two days of regular and emergency in-hospital medical care have been increased. Allowances for consultation services and electric shock treatment of psychiatric cases are now provided by the contract.

Allowances for surgery have been improved through more than 200 changes in the Schedule of Payments. These improvements include increases in allowances for over 140 surgical items, the addition of approximately sixty new items to the schedule, and many changes in the wording of the schedule based upon changes and improvements in the practice of medicine.

The Plan A obstetrical allowance has been increased from \$50 to \$60. The waiting period for

ber 31, cases paid averaged 507 per 1,000 contracts. During these first nine months hospitalization expense exceeded \$25,000,000 covering 993,000 days of care provided to 162,306 subscribers. Admissions for medical care continued to show the greatest percentage of increase with an eight per cent rise in frequency of occurrence over the similar period for 1957.

In a recent study, it was found that in the area of medical care admissions, diseases of the respiratory system was the chief cause of hospitalization with digestive diseases ranking second, circulatory diseases third and diseases of the genito-urinary system fourth. The study also disclosed that hospital stays of four days or less represented 45 per cent of all medical cases, exclusive of admissions for accidental injuries or poisonings.

The following table indicates the pattern of duration of stay of short stay cases in the four major categories of diseases.

83%
MAJOR
(Grade I and II)
IMPROVEMENT*

in Rheumatoid Arthritis

*Using combined drug therapy with
PLAQUENIL or Aralen® as maintenance therapy.
With Plaquenil or Aralen alone 62% grade I and II
improvement. (Scherbel, A.L.; Harrison, J.W., and
Atdjian, Martin; Cleveland Clin. Quart. 25:95,
April, 1958. Report on 805 patients with
rheumatoid arthritis or related diseases.)

Reasons for Failure:

1. Treatment discontinued too soon (percentage of patients improved increases substantially after first six months).
2. Patients in relapse after prolonged steroid therapy are resistant to Plaquenil or Aralen treatment for several months.

Plaquenil sulfate is supplied in tablets
of 200 mg., bottles of 100.

Dose: Initial — 400 to 600 mg.
(2 or 3 tablets) daily.
Maintenance — 200 to 400 mg.
(1 or 2 tablets) daily.

Write for Booklet.

Committee Action

Maternal Health

GERMAN MEASLES DURING EARLY PREGNANCY

The minutes of the annual meeting of the Committee on Maternal Health of the Minnesota State Medical Association held on May 22, 1958, include the following statement:

"The use of immune gamma globulin in the prevention and treatment of German measles in pregnant women was discussed, and it was the consensus that it was of no proven value. Its use in acute hepatitis, however, was recommended."

To answer questions raised by physicians, the above brief statement needs clarification.

It is agreed that German measles during the first trimester does increase the possibility of certain congenital malformations. The figures quoted in the past have varied tremendously, but most will agree that the incidence is probably increased considerably, from the expected 2 per cent of all births to 9 to 12 per cent of those with this disease. This is a serious potential increase.

The effects of immune gamma globulin, however, have been extremely variable in effect, apparently depending on the status of the donors of the pooled adult plasma, the dose, time of treatment and other factors. Results have shown significant protection in some cases and none at all in others. The dose recommended is 20 ml. given as early as possible. This makes it rather expensive treatment. But it is the only treatment available at present and its recommendation depends on the experience of the particular physician concerned. If I were personally concerned, I would use it in spite of the variable results because there is nothing else available and I would want to feel that I had done everything possible for my own family. But since the benefits cannot be guaranteed, the committee pointed out the high cost—about \$40.00.

The question was really concerned with the free distribution through the State Health Department. If gamma globulin were available at no cost, physicians would use it freely. To ask the patient to pay the cost was another matter. The patient

should know the potential risks and the possible benefits of gamma globulin and make the decision. This apparently represents the thinking of the committee. We are able to obtain only a small supply for distribution, and it is therefore restricted for use in young children with measles and for infectious hepatitis where its effects are definite and effective. If it were available in sufficient quantity, we would make it available for pregnant women as we did in the past for a time. The best method of preventing the serious effects of rubella in the infant is the deliberate exposure of young girls, since one attack usually confers immunity. There is an excellent article on this subject in the July 3, 1958, issue of the *New England Journal of Medicine* by Krugman and Ward of New York.

A. B. ROSENFELD, M.D.

Division of Special Services
Minnesota Department of Health

HOW TO PREVENT PROFESSIONAL LIABILITY

Mr. R. Crawford Morris, Cleveland attorney, wrote in *GP* (18:176, September, 1958) that *res ipsa loquitur* is legal doctrine that can take away a physician's hard earned money—fast.

The *GP* article resulted from a forum on the business problems affecting medical practice. Mr. Morris set forth his views on *res ipsa loquitur* at the forum jointly presented by The Wm. S. Merrell Company and the Medical Council of the Washington Metropolitan Area.

Mr. Morris, a member of the Cleveland law firm Arter, Hadden, Wykoff and Van Duzer, defined *res ipsa loquitur*: "Where you have a bad result or an accident that doesn't normally occur unless somebody goofed or was negligent; and where the instrument that caused that accident is in the exclusive control of the defendant accused; and where the plaintiff's conduct couldn't possibly enter in as a factor; then the law will presume, without proof of anything, that the defendant did goof, that he was negligent."

The point is this—the law will shift the burden away from the patient onto the doctor defendant to prove that he was not negligent. *GP* will publish the complete series of ten reports discussed at the unique medico-economic forum.

if you were to examine these patients



could you
detect
the uveitis patient on
Medrol*?

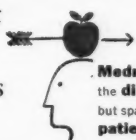
Probably not. Not without a history.

First, because he's more than likely symptom-free.

Second, because he shows none of the disturbing changes in appearance, behavior or metabolism sometimes associated with corticotherapy.

Even your practiced clinical eye would find it difficult to spot someone else's Medrol patient.

But in your own patients, you could see the advantages of Medrol right away. Why not try it?



Medrol hits
the **disease**,
but spares the
patient

Upjohn

Upjohn Company, Kalamazoo, Michigan

*TRADEMARK, REG. U. S. PAT. OFF. — METHYLPREDNISOLONE, UPJOHN

Meetings and Announcements

NATIONAL

AMERICAN MEDICAL ASSOCIATION, 12th clinical meeting Minneapolis, December 2-5, 1958

American College of Surgeons sectional meetings:

Charleston, South Carolina, January 19, 20, 21, 1959

Houston, Texas, February 2, 3, 4, 1959

Vancouver, British Columbia, February 26, 27, 28, 1959

St. Louis, Missouri (four-day meeting; joint Nurses' Sessions), March 9-12, 1959

Montreal, Quebec (four-day meeting; joint Nurses' Sessions), April 6-9, 1959

American College of Allergists Graduate Instructional Course and Annual Congress, March 15-20, 1959, Mark Hopkins Hotel, San Francisco, California. Contact: John D. Gillaspie, M.D., Treasurer, 2049 Broadway, Boulder, Colorado."

Chicago Postgraduate Course in Arthritis and Related Conditions, February 19, 20 and 21, 1959, Thorne Hall, Northwestern University, Lake Shore Drive at Superior Street, Chicago, Illinois. Tuition \$50. Frank R. Schmid, M.D., 303 East Chicago Avenue, Chicago 11, Illinois, secretary.

Mediclinics, fourth annual refresher course of postgraduate medical education, Fort Lauderdale, Florida, March 2-12, 1959. (Acceptable for 32 hours of postgraduate study—Category I credit for American Academy of General Practice members).

INTERNATIONAL

International College of Surgeons, southeastern regional meeting, Miami Beach, January 4-7, 1959. For information, write to Harold O. Hallstrand, M.D., 7210 Red Road, South Miami, Fla., chairman.

AMERICAN COLLEGE OF OBSTETRICIANS AND GYNECOLOGISTS

The American College of Obstetricians and Gynecologists has announced the following future meeting plans:

1959—Atlantic City, New Jersey—April 5-9

Headquarters—Traymore Hotel

All activities except breakfast conferences and banquet in Convention Hall.

1960—Chicago, Illinois—April 24-27

Headquarters—Morrison Hotel

All activities in hotel

1961—Boston, Massachusetts—April 16-21

(If no convention hall is available, this meeting will be transferred to The Americana, Bal Harbour, Miami Beach, Florida)

OPHTHALMOLOGICAL SOCIETY CONFERENCE

The Chicago Ophthalmological Society will hold its Annual Clinical Conference on February 13 and 14, 1959, at the Drake Hotel in Chicago, Illinois.

The subjects will include a symposium on the management of surgical conditions of lids and lacrimal apparatus, management of uveitis, prophylaxis and treatment of vascular occlusions, plastic surgical principles, clinical value of electro-retinography, management of cardiac arrest and glaucoma management, and present status of preserved eye tissue for transplantation.

Registration fee for the entire course including round table luncheons and buffet supper is \$45.00 and may be payable to the Registrar: Mrs. Edward J. Ryan, 1150 North Lorel Avenue, Chicago 51, Illinois.

The Fifteenth Annual Sanford R. Gifford Memorial Lecture will be delivered by Dr. Paul A. Chandler of Boston, Massachusetts, on Friday, February 13, 1959, at the Drake Hotel at 5:15 P.M. All ophthalmologists are invited to attend the Gifford Memorial Lecture and the buffet supper which follows.

POSTGRADUATE COURSE ON DISEASES OF THE CHEST

The Council on Postgraduate Medical Education of the American College of Chest Physicians will present the Fourth Annual Postgraduate Course on Diseases of the Chest at the Sir Francis Drake Hotel, San Francisco, California, February 16-20, 1959.

The most recent advances in the diagnosis and treatment of heart and lung diseases, medical and surgical aspects, will be presented.

Tuition for this five-day course will be \$100, including luncheon meetings.

Further information may be obtained by writing to the Executive Director, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Ill.

CONTINUATION COURSES

Medical continuation courses to be presented at the Center for Continuation Study, University of Minnesota, are as follows:

January 5-7 Otolaryngology for General Physicians

January 15-17 Newer Drugs in General Practice

January 22-24 Surgery for Surgeons

February 23-25 Cardiovascular Diseases for General Practice

For further information concerning the above courses, write to the Director, Department of Continuation Medical Education, 1342 Mayo Memorial, University of Minnesota, Minneapolis 14, Minnesota.

MINNESOTA PUBLIC HEALTH CONFERENCE

The Minnesota Public Health Conference, at its twelfth annual meeting at the St. Paul Hotel, September 18 and 19, re-elected Robert D. Ragsdale, executive secretary of the Hennepin County Tuberculosis Association.

(Continued on Page A-53)



the chill

the sneeze

the cough

the aches

the fever

in the common cold

and other upper respiratory infections ...

the only such preparation to contain penicillin V to curb bacterial complications ...

action

- antibacterial
- analgesic
- antipyretic
- antihistaminic
- mood-stimulating

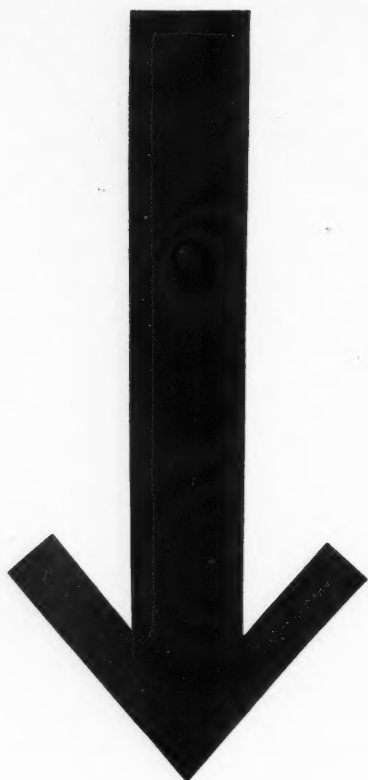
Supplied: Capsules, vials of 36. Each capsule contains: penicillin V (100,000 units), 62.5 mg.; salicylamide, 194 mg.; promethazine HCl, 6.25 mg.; phenacetin, 130 mg.; mephentermine sulfate, 3 mg.

PEN·VEE·Cidin®

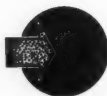
Penicillin V, Salicylamide, Promethazine Hydrochloride, Phenacetin, Mephentermine Sulfate



Philadelphia 1, Pa.



PENETRATES*



SOFTENS FECES



ADDS FORMED BULK



EASES EVACUATION



* Unique encapsulation of millions of minute oil globules by Irish moss assures complete penetrant diffusion in stools.

IN CONSTIPATION

TO SOFTEN STOOLS WITHOUT TISSUE DEHYDRATION
AND MAKE THEM MOVE WITHOUT STRAINING

KONDREMUL®

COLLOIDAL EMULSION OF MINERAL OIL AND IRISH MOSS **patch**

**PROVEN SAFE...EFFECTIVE • IN PREGNANCY • IN
CHILDHOOD • IN MIDDLE-AGED PATIENTS • IN ELDERLY
PATIENTS • THROUGH MORE THAN 25 YEARS OF USE**

AVAILABLE in three pleasant-tasting formulas:

for the average patient

KONDREMUL (Plain)

containing 55% mineral oil. Bottles of 1 pint.

for more hypotonic cases

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0.66 Gm. non-bitter Ext. Cascara per tablespoonful.

Bottles of 14 fl.oz.

for more resistant constipation

KONDREMUL WITH PHENOLPHTHALEIN

0.13 Gm. (2.2 gr.) phenolphthalein per tablespoonful.

Bottles of 1 pint.

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THE E. L. PATCH COMPANY Stoneham, Massachusetts

70 YEARS OF SERVICE TO THE MEDICAL PROFESSION

MINNESOTA PUBLIC HEALTH CONFERENCE

(Continued from Page A-50)

tion, as its 1959 president. Others elected were: Dr. Robert K. Anderson, St. Paul, first vice president; Mrs. Mildred Benson, St. Paul, second vice president; and Dr. Stewart C. Thomson, Minneapolis, treasurer. Dr. John Smiley, Dr. Henry Bauer, and Richard Bond, Minneapolis, and Richard Sha, Rochester, were elected to membership on the Conference Executive Committee. The organization will hold its 1959 annual meeting September 24-25 at the Radisson Hotel in Minneapolis.

Recipient of an honorary membership in the Minnesota Public Health Conference for "outstanding and meritorious achievement in public health in Minnesota" was Dr. Adolph G. Liedloff, retired Mankato physician and health officer. The presentation was made at the Conference's annual Albert J. Chesley, M.D., Memorial Banquet, held September 19. Making the presentation was Dr. A. B. Rosenfield of the Minnesota Department of Health.

Dr. Liedloff retired as part-time district health officer of District II at Mankato, in February, 1956, after nearly fifty years of service in public health. He was a charter member of the Minnesota Sanitary Conference which was organized in 1907. He served one term as president of the Sanitary Conference which later became the Minnesota Public Health Conference, as affiliate of the American Public Health Association.

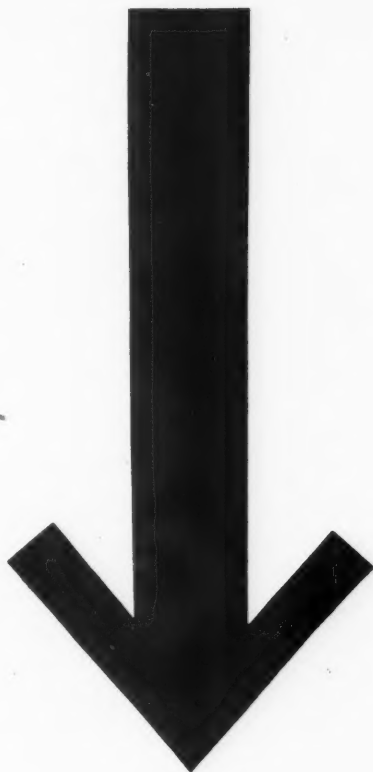
Dr. Liedloff served as Blue Earth County health officer from 1932 until his appointment as District II health officer on a part-time basis on May 1, 1944. His appointment to the district office was repeatedly extended beyond the normal retirement age at the request of the late Dr. A. J. Chesley and other health department officials. In one such request, Dr. Chesley stated, "He is doing a splendid piece of work for us."

AMEF IN MINNEAPOLIS GETS NATIONAL ATTENTION

In Minnesota, as in other states, Fall is traditional as the time for AMEF campaigns. Just as traditional in the past few years has been Minnesota's rank near the top of successful states. This year, in an attempt to improve that success, the Hennepin County Medical Society (Minneapolis) has embarked on an experimental program.

The problems of AMEF campaigns in large cities are many, but basically they all stem from the difficulty of complete coverage. In an effort to sidestep this problem, the Minneapolis program, under the guidance of Dr. Harold G. Benjamin, AMEF Chairman, will utilize departmental meetings in the city's thirteen hospitals for solicitations of physicians.

Chiefs of staff have been enlisted on Dr. Benjamin's committee, and they in turn have secured the assistance of their various department heads. During the month of November, five minutes at the start of each staff meeting in the hospital will be devoted to a short discussion of AMEF and subsequent distribution of donation cards. For further ease of giving special blank checks have been attached to each card. A series of letters and



NEW 3-WAY "PICKUP"
FOR APPREHENSIVE AND/OR
HYPERTENSIVE PATIENTS

NEO-SLOWTEN

patch

A TRANQUILIZING COMBINATION

- relieves anxiety, irritation, fatigue
- reduces mild elevated blood pressure
- refreshes neural tone

EACH WHITE, SCORED TABLET CONTAINS:

Phenobarbital 16.2 mg. (¼ gr.)

Warning: May be habit-forming

Reserpine 0.1 mg.

Thiamine hydrochloride 5.0 mg.

SUPPLIED: Bottles of 100 scored tablets.

patch

THE E. L. PATCH COMPANY
Stoneham, Massachusetts

70 YEARS OF SERVICE TO THE MEDICAL PROFESSION

MEETINGS AND ANNOUNCEMENTS

pamphlets have been mailed to the Chiefs of Staff and their department heads outlining individual steps in the campaign. Shortly before the first of the month a general mailing went to all Minneapolis physicians. Finally each doctor will be in attendance at one or more meetings during which the AMEF program will be outlined.

The enthusiastic committee chairman, Dr. Benjamin, says of the plan, "It provides the element of direct approach so difficult to achieve. It affords a physician the opportunity of actually joining with others in making his gift, and best of all, it burdens no one—just five minutes of time by the department head." If the plan proves successful, AMEF plans to suggest its use elsewhere.

(The preceding account of the "Minneapolis Experiment" appeared in "The Foundation," AMEF Newspace.)

Minnesota AMEF Goal Set

Minnesota goal for the current AMEF campaign is \$64,926 or \$30 (thirty dollars) per active member. This goal was set by county society AMEF chairmen at their annual meeting held in September.

In 1957, 66.7 per cent of the Minnesota State Medical Association membership participated, with contributions totalling \$28,684.70. Blue Earth, Freeborn, Nicollet, and Le Sueur Counties have already reported 100 per cent physician participation.

Members are encouraged to help county AMEF chairmen complete solicitations by December 25.

Malpractice Prophylaxis

REQUIRING
PERSONAL EXAMINATION FOR DIAGNOSIS AND TREATMENT.

*Specialized Service
makes our doctor safer*

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since 1899

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MINNESOTA STATE MEDICAL ASSOCIATION BROADCASTS BLANKET THE STATE

The current health information broadcast series, "Doctor, Tell Me," sponsored by the Minnesota State Medical Association began its thirty-nine-week schedule during the week of October 19. Approximately twenty-five radio stations throughout the state are now participating in the project. The program again features the presentation of health topics in an informal but informative manner by Dr. James Rogers Fox of Minneapolis. Assisting Dr. Fox are Miss Audrey June Booth and Jerry Ball of the KUOM staff. Format of the series will include "Medical Facts and Fallacies" treatment, letters from the mailbag, and question and answer sessions.

"Doctor's House Call" is the new five-minute health program featuring Dr. Fox, heard Monday through Friday at 6:10 P.M. on WCCO radio. Dr. Fox is also heard each Sunday morning at 8:00 A.M. on WCCO radio. Name of the show, "Your Health."

MSMS RADIO PROGRAMS 1958-59 Season

"Doctor, Tell Me"

Albert Lea.....	KATE, Monday, 7:00 P.M.
Alexandria.....	KXRA, Monday, 6:30 P.M.
Brainerd.....	KLIZ, Sunday, 10:15 A.M.
Crookston.....	KROX, Saturday, 10:15 A.M.
Detroit Lakes.....	KDLM, Saturday, 10:00 A.M.
Duluth.....	KDAL, Sunday, 9:05 P.M.
Ely.....	WELY (to be announced)
Eveleth.....	WEVE, Sunday, 1:45 P.M.
Fairmont.....	KSUM, Friday, 7:35 P.M.
Faribault.....	KDHL, Monday, 7:05 P.M.
Grand Rapids.....	KOZY (to be announced)
Mankato.....	KYSM, Saturday, 5:30 P.M.
Marshall.....	KMHL, Sunday, 5:30 P.M.
New Ulm.....	KNUJ, Saturday, 8:45 A.M.
Pine City.....	WCMP, Sunday, 12:30 P.M.
Pipestone.....	KLOH (to be announced)
Redwood Falls.....	KLGR, Sunday, 5:30 P.M.
St. Cloud.....	KFAM, Saturday, 11:30 A.M.
Thief River Falls.....	KTRF (to be announced)
Twin Cities.....	KUOM, Monday, 11:15 A.M.
Wadena.....	KWAD, Sunday, 1:45 P.M.
Willmar.....	KWLM, Sunday, 5:30 P.M.
Winona.....	KWNO, Sunday, 9:15 P.M.
Worthington.....	KWOA (to be announced)

"Your Health"—WCCO, Minneapolis-St. Paul, Sunday, 8:00 A.M.

"Doctor's House Call"—WCCO, Minneapolis-Saint Paul, Monday through Friday, 6:10 P.M.



nasal and paranasal congestion and control secondary invaders

Now, a single unique preparation, Trisulfaminic, can provide dramatic relief from congestion, and at the same time protect the patient from secondary bacterial invaders. Often within minutes of the first dose, congestion begins to clear; the patient can breathe again.

Trisulfaminic is particularly valuable for the "almost well" patient who is recovering from influenza but is left with congested nasal and bronchial passages. And for patients with purulent rhinitis, sinusitis or tonsillitis, combination therapy with Trisulfaminic offers a most realistic approach to total treatment.

Oral Decongestant Action. Through the action of Triaminic, nasal patency

is achieved rapidly and dramatically. Adequate ventilation helps eliminate mucus-harbored pathogens. And because Trisulfaminic is administered orally, there is no problem of rebound congestion, no pathological change wrought in the nasal mucosa.

Wide-Spectrum Action. Secondary bacterial infections, which are always a threat in upper respiratory involvement, are forestalled by the wide-spectrum effectiveness of triple sulfonamides. This added antibacterial protection makes Trisulfaminic highly useful in treating the debilitated patient who is prone to lingering or frequently recurring colds.

Trisulfaminic tablets and suspension

TRIAMINIC PLUS TRIPLE SULFAS

Each Tablet and each 5 ml. teaspoonful of Suspension contains:

Triaminic®	25 mg.
(phenylpropanolamine HCl.	12.5 mg.;
pheniramine maleate	6.25 mg.;
pyrilamine maleate	6.25 mg.)
Trisulfapyrimidines U.S.P.	0.5 Gm.

Dosage: Adults—2 to 4 tablets or teaspoonfuls initially, followed by 2 tablets or teaspoonfuls every 4 to 6 hours until the patient has been afebrile for 3 days. Children 8 to 12 years—2 tablets or teaspoonfuls initially, followed by 1 tablet or teaspoonful every 6 hours. Younger children—dosage in proportion.

SMITH-DORSEY • a division of The Wander Company • Lincoln, Nebraska • Peterborough, Canada



**CHRONIC
BRONCHITIS
OR
INFECTIOUS
DERMATITIS?**

**ACCELERATE THE
RECOVERY
PROCESS WITH
VARIDASE** **BUCCAL** TABLETS

STREPTOKINASE-STREPTODORNASE LEDERLE

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LEDERLE LABORATORIES, a Division of AMERICAN CYANAMID COMPANY,
Pearl River, New York

Woman's Auxiliary

SECRETARY OF STATE COMPLIMENTS MINNESOTA AUXILIARY MEMBERS

Secretary of State John Foster Dulles, in a recent letter to Mrs. Reuben F. Erickson, State Auxiliary President, extended his personal appreciation for the excellent manner in which the wives of Minnesota's Men of Medicine helped to make the visit of World Health Organization delegates and their wives attending the June meeting more pleasant.

The comments of Mr. Dulles were as follows:

Dear Mrs. Erickson—Ever since the World Health assembly last June, I have heard how successful it was and what a deep impression Minnesota and Minneapolis made on the delegates. Most recently I have been again reminded of it by some comments I received at the United Nations. I would like to express my appreciation for your contribution to the success of the meeting at Minneapolis.

In particular, I want to thank you for the time and effort you and your associates expended in arranging interesting activities for the delegates and their wives. For many of the group it was their first visit to this country and they left with warm remembrances of the friendship and hospitality they received from the people of Minnesota.

I am grateful to you and those who worked with you for your help in furthering international understanding and good will.

JOTTINGS FROM THE RECENT JOURNEYING OF THE STATE PRESIDENT

October 27.—Attended meeting of the Mower County Auxiliary in Austin with luncheon at the Kingswood Hotel.

October 29.—Participated in a luncheon meeting of the Wabasha County Medical Society held at the Terrace in Lake City. I was accompanied by Mrs. Raymond Scherer, legislative chairman. Mrs. Scherer presented a brief résumé of pending legislation to members of the group.

November 4.—Attended an area auxiliary meeting at Hart's Cafe in Montevideo. Mrs. M. I. Hauge, Clarkfield is the area chairman. The same day I attended an evening dinner meeting of the West Central Minnesota Auxiliary at the Country Club in Morris.

November 10.—Attended a luncheon meeting at the home of Mrs. John Stuhr in Stillwater.

MRS. REUBEN ERICKSON

HENNEPIN COUNTY AUXILIARY HOLDS OPENING MEETING

The first general meeting of the Women's Auxiliary to the Hennepin County Medical Society was held at the Minneapolis Institute of Arts, November 7, 1958. A very informative and entertaining talk by Mr. Boris Sokoloff, general manager of the Minneapolis Symphony Orchestra gave the women some insight as to what



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PRIVATE
SANITARIUM**

for the
Diagnosis, Care
and Treatment
of Nervous
and Mental
Disorders

MAIN BUILDING—One of 8 Units in "Cottage Plan"

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PRESCOTT, WISCONSIN

Located on beautiful Lake St. Croix, 18 miles from the Twin Cities, it has the advantages of both City and Country. Every facility for treatment provided, including recreational activities and occupational therapy under trained

personnel. Close personal supervision given patients, and modern methods of therapy employed. Inspection and cooperation by reputable physicians invited. Rates very reasonable. Special rates given to custodial patients.

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Prescott, Wisconsin
Howard J. Laney, M.D.
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Hewitt B. Hannah, M.D., Andrew J. Leemhuis, M.D.
527 Medical Arts Bldg., Tel. FE. 2-1357, Minneapolis, Minn.

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transpires behind the scenes prior to a scheduled performance. Mr. Sokoloff pointed out that the Minneapolis Symphony is the oldest symphony orchestra west of the Mississippi, having been organized in 1903. It is sustained entirely by the support of its patrons.

SCOTT-CARVER COUNTY AUXILIARY ACTIVITIES

Members of the Scott-Carver County Medical Auxiliary and their husbands were taken on a tour of the new Community Hospital at Watertown on Thursday, October 16, 1958. Following the tour, a dinner was served at the local high school by the members of one of the Hospital Guild circles. Another project of the Scott-Carver group has included providing assistance for a group of retarded children housed in one of the buildings located on the grounds of the Women's Reformatory at Shakopee.

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In Memoriam

JOHN ALBERT SCHULTZ

Dr. John Albert Schultz, retired physician and surgeon from Albert Lea, died October 31, 1958. He was eighty-one years old at the time of his death.

Dr. Schultz, a native of Rochester, Minnesota, completed his secondary schooling at Sleepy Eye High School. He was a graduate of Rush Medical College. From 1903 until 1906, he practiced medicine at Lenox, South Dakota, from 1906-1917, he practiced at Dundee, and from 1917 until 1921, when he came to Albert Lea, he practiced in Emmons.

In Albert Lea, he was a member of the surgical and medical clinic and a staff member of Naeve Hospital. He was elected president of the Freeborn County Medical Society in 1938. He also belonged to the Minnesota State Medical Association and the American Medical Association.

He was a Master Mason, a past high priest of the Royal Arch Masons Chapter, a Knights Templar, a member of Osman Shrine and belonged to the Scottish Rite Consistory at Winona.

He is survived by his wife; a sister, Mrs. Dolly McDonald, and a brother, District Judge W. A. Schultz, both of South Saint Paul. Also surviving is a nephew, Everett Donnell, Minneapolis, and a niece, Joanna Strobel, Moscow, Idaho.

CARL G. WINGQUIST

Dr. Carl G. Wingquist, physician on the Cuyuna Range for the past twenty years, died November 4, 1958, at Miners Hospital in Crosby. He was fifty-three years old.

Dr. Wingquist was born near Stockholm, Sweden, on April 5, 1905. He came to this country with his parents and lived in Wisconsin and later near Anoka. The doctor graduated from the University of Minnesota School of Medicine. He took his internship at St. Mary's Hospital in Duluth.

Dr. Wingquist spent four years in practice at Carlton and a year in California. In 1938, he came to the Cuyuna Range and established a practice in the Pitt Building in Crosby. In 1941, he entered the Army, serving for five and one-half years. He was chief of surgery for a 600-bed evacuation hospital in Europe, serving with the Fourth Armored Division.

Following his medical discharge, Dr. Wingquist returned to his practice in the range area. Five years ago, he joined Dr. A. R. Anderson in the construction of the Crosby Clinic.

Dr. Wingquist was a member of the Myrin-James American Legion Post of Ironton, the Minneapolis Athletic Club. He was also a member of the American Medical Association, Upper Mississippi Medical Society and Minnesota State Medical Association.

Survivors include his wife, Mae; daughter, Carole, a nurse in a Minneapolis hospital; a son, Carl, Jr., a student at the University of Minnesota; and his father, Gustav, in Chicago, Illinois.

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General Interest

Dr. J. Arnold Borgen, of the Mayo Clinic staff, was a member of a panel discussing functional disturbances of the gastrointestinal tract at the final session of the American College of Gastroenterology held in New Orleans, Louisiana.

* * *

The Southwestern Minnesota Medical Society's annual meeting, November 3, at the Pipestone Country Club, had as its guest speaker, Dr. B. J. Spencer, of Minneapolis. Dr. F. W. Bofenkamp of Luverne was elected president; Dr. Hugh Patterson of Slayton, president-elect; Dr. Bernard Karleen of Jackson, vice president; Dr. O. M. Heiberg of Worthington, secretary. Dr. E. W. Arnold of Adrian and Dr. B. M. Stevenson of Fulda were named censors. Dr. R. J. Kotval was elected censor to fill the unexpired term of Dr. C. A. Williams of Pipestone who has retired from practice. Chosen delegates to the Minnesota State Medical Association convention in 1959 were Dr. John Lohman and Dr. O. M. Heiberg.

* * *

Dr. Don R. Mathieson, head of the Section of Clinical Pathology in the Mayo Clinic and Assistant Professor of Pathology in the Mayo Foundation, reported for active duty at the first annual Research Reserve Seminar on Submarine and Diving Medicine at the U. S. Naval Submarine Base at New London, Connecticut, October 24. Dr. Mathieson, who holds the rank of commander in the U. S. Naval reserve, spent fourteen days in active training in submarine medicine at the base and one of the days he spent aboard an operating submarine.

* * *

Dr. Gerald M. Needham, Mayo Clinic bacteriologist, has been elected president of the Rochester Methodist Hospital succeeding T. H. Johansen. Election came at the sixth annual meeting of the hospital's thirty-two-member board of directors, held in the Kahler Hotel.

* * *

Dr. C. A. Good has been named by the Mayo Clinic Board of Governors to succeed the late Dr. Harry M. Weber as head of the Clinic Section of diagnostic roentgenology.

* * *

Guest speaker at a recent Monday night meeting of the Sertoma Club was Dr. V. A. Vix of the Worthington Clinic. After a short introductory talk, he presented an official American Heart Association film on cardiac experimentation carried on by that group.

* * *

Another physician has joined the Medical Arts Clinic in Albert Lea. He is Dr. Arlo R. Blumer, a native of Beresford, S. D. He will practice with Drs. Theodore M. Hanse, John P. Person, and Sidney A. Whitson. He interned at the Veterans Administration Hospital in Long Beach, California, and spent a year in general practice in Alhambra, California, before entering service. Dr. Blumer went into the Army Medical Corps in 1956 and spent two years in Asmara, Eritrea, Ethiopia, the second

year as commander of the hospital there. He was returned to inactive status in 1958.

* * *

Dr. Bruce E. Douglass, of the Mayo Clinic staff, recently reported on caprices in symptoms and growth of lung cancers for Missouri family physicians at their annual session in St. Louis.

* * *

Dr. Charles W. Mayo, Rochester, received an honorary degree of doctor of humanities from Nasson College where he addressed an academic convocation recently.

* * *

New president of the Minnesota Academy of General Practice is Dr. John G. Lohmann, Pipestone. Dr. Lohmann succeeded Dr. Robert O. Quello, Minneapolis, to that office at the recent fall meeting of the group held in Rochester. Dr. Cy Tift, St. Paul, was named president-elect; Dr. H. L. Huffington, Waterville, vice president, and Dr. Paul Linner, St. Paul, secretary-treasurer. Dr. Duanne Olson, Gaylord, was named speaker of the house of delegates and Dr. William Watson, St. Paul, vice speaker. Named delegates to the national house of delegates meeting in San Francisco, California, next April were Dr. Herman Drill, Hopkins, and Dr. James A. Cosgriff, Jr., Olivia.

* * *

Dr. B. J. Kennedy, Associate Professor, Department of Medicine, was a guest lecturer at the eleventh annual scientific meeting of the Detroit Institute of Cancer Research on October 29. He spoke on "The Physiological Responses during Hormone Therapy of Breast Cancer."

* * *

On October 20, 1958, Dr. Robert E. Priest addressed the Minneapolis Chapter of the American Academy of General Practice on the subject, "Disorders of the Ear as Related to General Practice."

* * *

Dr. Thomas B. Magath, head of the Section of Clinical Pathology of the Mayo Clinic from 1946 to 1958, and professor of pathology in the Mayo Foundation, was honored on November 4 in Chicago at a dinner meeting of the American Society of Clinical Pathologists and the College of American Pathologists. Dr. Magath received the Ward Burdick Award of the American Society of Clinical Pathologists. The award is described as "a gold medal which shall be presented to that Fellow who, in the opinion of the Research Committee, has presented the most meritorious contributions to the science of clinical pathology."

* * *

Dr. Frank Krusen, senior consultant of the department of physical medicine and rehabilitation at the Mayo Clinic, Rochester, was the speaker at the tenth annual anniversary luncheon meeting of the St. Paul Rehabilitation Center held at the University Club. Dr.

(Continued on Page A-62)

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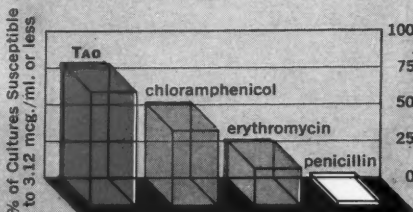
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	adults	children	all Staph infections
Cured	172 (80%)	148 (89%)	71 (88%)
Improved	28 (13%)	8 (5%)	7 (9%)
Failure	17 (7%)	11 (6%)	3 (3%)

Types of infecting organisms: The majority of identified etiologic microorganisms were *Staph. aureus* and *Staph. albus*. Tao has its greatest usefulness against organisms such as: staphylococci (including strains resistant to other antibiotics), streptococci (beta-hemolytic strains, alpha-hemolytic strains and enterococci), pneumococci, gonococci, *Hemophilus influenzae*.

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(3 out of 217)
Gastrointestinal—7.8% (17 out of 217)

(b) children

Total—0.6%
(1 out of 167)
Skin rash—none
Gastrointestinal—0.6% (1 out of 167)

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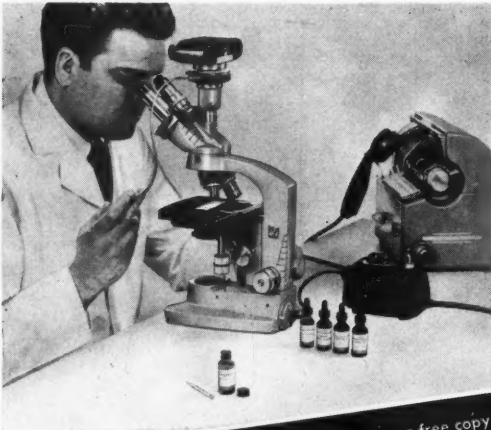
Supplied: Tao Capsules—250 mg. and 125 mg.; bottles of 60. Tao for Oral Suspension—1.5 Gm.; 125 mg. per teaspoonful (5 cc.) when reconstituted; unusually palatable cherry flavor; 2 oz. bottle.

References: 1. English, A. R., and Fink, F. C.: *Antibiotics & Chemother.* (Aug.) 1958. 2. English, A. R., and McBride, T. J.: *Antibiotics & Chemother.* (Aug.) 1958. 3. Wennersten, J. R.: *Antibiotic Med. & Clin. Therapy* (Aug.) 1958. 4. Celmer, W. D., et al.: *Antibiotics Annual 1957-1958*, New York, Medical Encyclopedia, Inc., 1958, p. 476.

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(Continued from Page A-60)

Krusen spoke on "The Future of Rehabilitation in St. Paul." The center, located in the Wilder Foundation building, is sponsored by the Foundation and the Minnesota Society of Crippled Children and Adults.

* * *

Dr. M. T. Summar, Eveleth, member of the East Range Clinic staff, has been informed he has been certified as a Diplomate of the American Board of Otolaryngology. Dr. Summar has been associated with the East Range Clinic since August, 1957. Prior to this time, Dr. Summar was a resident in ear, nose, and throat surgery at Charity Hospital, New Orleans. In January, 1959, Dr. Summar will become a full partner in the East Range Clinic.

* * *

Elected president of the Minnesota American Legion Hospital Association during its annual trustees' meeting was Dr. George W. Snyder, of St. Paul.

* * *

Succeeding Dr. Karl W. Anderson as nursing services chairman for the Minneapolis-Hennepin County Red Cross chapter, is Dr. Earl T. Opstad, assistant medical director of Northwestern Life Insurance Company. Dr. Anderson will continue on the Red Cross nursing committee as vice chairman.

* * *

Dr. Olaf Lukk, Montgomery, has been elected chief of staff of the Community Memorial Hospital, New Prague. He succeeds Dr. E. J. Nelson, Lonsdale. Dr. E. R. Rynda, New Prague, was elected vice chief of staff. Dr. Elizabeth K. Rieschl, Jordan, was re-elected for her seventh term as secretary-treasurer.

* * *

Dr. H. J. Brekke, medical director for Lutheran Brotherhood, has been elected president of the medical section of the National Fraternal Congress. The congress is made up of fraternal life insurance organizations. The election took place during the congress convention at Miami Beach, Florida.

* * *

A St. Paul internist and specialist in heart conditions, Dr. A. MacDonell Richards, recently presented a lecture, entitled "Heart Diseases," at a meeting of the American Heart Association held in San Francisco.

* * *

Dr. Norman C. Hill, who has completed a fellowship in neurologic surgery at the Mayo Foundation, Rochester, has been awarded the American Academy of Neurological Surgery prize of \$100.00 and other considerations for his work, "Cerebrospinal-Fluid Proteins, Glycoproteins, and Lipoproteins in Obstructive Lesions of the Central Nervous System," written with Drs. N. P. Goldstein, W. F. McGuckin, H. J. Svein, and Mr. B. F. McKenzie, of the Mayo Clinic and Mayo Foundation. The prize is given for the best paper on original clinical and laboratory investigations relating to the nervous system by doctors of medicine in training in neurologic surgery.

* * *

Dr. George B. Ewens, of the East Range Clinic, Virginia, has been certified as a diplomate of the

GENERAL INTEREST

American Board of Dermatology. Dr. Ewen has been associated with the East Range Clinic since August, 1957. Prior to that time, he was a resident in dermatology at the University of Minnesota and Ancker Hospital in St. Paul.

* * *

Coroner-elect of Dakota County is Dr. Roger W. Marks, West St. Paul.

* * *

"Lesions of the Lower Bowel" is the title of a 347-page book containing seventy-five illustrations in color, written by Dr. Raymond J. Jackman, head of the Section of Proctology of the Mayo Clinic and associate professor of proctology in the Mayo Foundation, Graduate School, University of Minnesota. The book, which has just been issued by Charles C Thomas, medical publisher, Springfield, Illinois, is written from the standpoint of the needs of the clinician in medicine according to Dr. Jackman.

* * *

Dr. Arthur T. Hertig, Shattuck professor of pathologic anatomy in the Harvard Medical School, gave a lecture on "Hormonally Active Ovarian Tumors" at the Mayo Foundation, Rochester, Minnesota, October 23, 1958.

* * *

Dr. Cuthbert E. Dukes, director of the research laboratory of Saint Mark's Hospital in London, England, gave a lecture on "Cancer Control in Familial Polyposis of the Colon" at the Mayo Foundation, Rochester, Minnesota, on October 24, 1958.

* * *

Dr. Wm. M. Stromme, Minneapolis, was a guest speaker at the meeting of the Wisconsin Society of Obstetrics and Gynecology on October 25, 1958, presenting a paper, "Conservative Surgery for Ectopic Pregnancy."

* * *

Dr. Fred B. Wilson, St. Paul, spoke before the McLeod County Medical Society in Hutchinson on Thursday, November 20, 1958. His subject was "Special Methods in Neurological Diagnosis."

* * *

Dr. Gordon R. Kamman, St. Paul, and Mr. Charles Murnane, St. Paul attorney, addressed a joint meeting of the Mesabi Range Medical and Bar Associations at Hibbing, on Monday evening, November 10. Their subject was "Medico-Legal Relationships."

Dr. Kamman and Mr. Murnane also spoke before the Stearns-Benton Medical and Bar Associations on the same subject on November 20, in St. Cloud.

* * *

Dr. John D. Krafchuk has just returned to Minnesota and has opened an office for the practice of dermatology in the Medical Arts Building, Minneapolis. He left Minnesota in 1954, on being called back to active military duty, to become Chief of Dermatology at the United States Naval Hospital at Mare Island, California. For the past three years, Dr. Krafchuk has been Assistant Professor of Medicine (Dermatology) at the Tulane University School of Medicine in New Orleans, the



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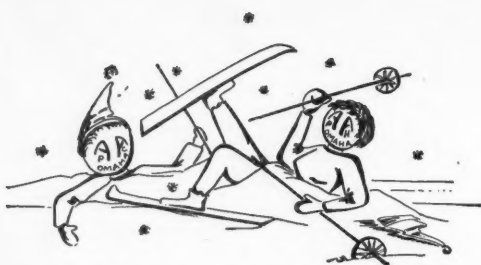
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director of the skin histopathology laboratory at that institution. Last year he was elected President of the Louisiana Dermatological Society. A year ago he presented three papers on cutaneous wound healing and on fungus infections, at the 11th International Congress of Dermatology at Stockholm.

* * *

Dr. Frank H. Krusen, senior consultant and former head of the section of physical medicine and rehabilitation of the Mayo Clinic, has received a special citation from Governor Orville L. Freeman for meritorious service to the citizens of Minnesota and to the nation. The award was made at the dinner of the House of Delegates of the American Medical Association during its clinical session in Minneapolis this month. Earlier this year, the American Medical Association conferred upon Dr. Krusen its Distinguished Service Award.

* * *

LUVERNE PHYSICIAN IS GENERAL PRACTITIONER OF THE YEAR

Minnesota's 1958 General Practitioner of the Year is Dr. Charles L. Sherman, 82-year-old physician from Luverne, Minnesota. He is the recipient of this year's honor awarded annually by the Minnesota State Medical Association.

Dr. Sherman, a general practitioner for more than fifty-eight years, is still active in his practice. He has been a member of the State Board of Medical Examiners since 1927, having served frequently as its chairman.

He was also one of the original sponsors of the project to locate a tuberculosis sanatorium in Worthington. He was named the first president of that sanatorium board in 1914 and retained this office for forty-three years until the closing of the institution in 1957. During the life of the institution, the tuberculosis fatality rate in the eight-county area served by the sanatorium decreased from sixty-four deaths per year to the present no death rate.

In addition, he still serves as one of the original members of the corporate body of Minnesota Blue Shield.

As a civic leader in the Luverne community, Dr. Sherman organized the Rotary Club and served as its president. He is a past president of the Kiwanis and Commercial Clubs of Luverne. For more than fifty years, Dr. Sherman has been a Worshipful Master of Ben Franklin Masonic Lodge.

For many years, Dr. Sherman has taken an active interest in the medical needs of the community. During his more than half a century of practice in Luverne, he has served as City Health Officer, Rock County Health Officer, and Rock County Coroner.

He is a member of the Southwestern Minnesota Medical Society, and a former president of that organization; a member of the Minnesota State Medical Association, and the AMA; a member and past president of the Sioux Valley Medical Association and the Southern Minnesota Medical Association.

The name of Dr. Sherman was placed in nomination for the national practitioner award sponsored annually by the American Medical Association. Awards were made in conjunction with the recent American Medical Association Clinical meeting in Minneapolis.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

MINNEAPOLIS PHARMACIST, IOWA PHYSICIAN AND NURSE SENTENCED IN ABORTION CASE

On September 22, 1958, Louis Dorfman, thirty-seven, 1336 Thomas Ave. N., Minneapolis, appeared before the Hon. Harry E. Narey, Judge of the 14th Judicial District at Storm Lake, Iowa, and entered a plea of guilty to the crime of attempt to produce abortion. Judge Narey then sentenced the defendant Dorfman, who is a licensed Minneapolis pharmacist, to pay a fine of \$500 and to serve a term of not to exceed five years in the Iowa State Penitentiary at Fort Madison, Iowa. The Court then immediately suspended the sentence, except that portion of the sentence providing for a fine, and placed Dorfman on probation for a period of one year on his good behavior.

The defendant Evelyn Daniels, who served as Dr. Swallum's nurse in Storm Lake, entered a plea of guilty before Judge Narey on September 27, 1958, to the crime of attempt to produce abortion at which time she was sentenced to a term of not to exceed five years in the Women's Reformatory at Rockwell City, Iowa, in addition to being fined the sum of \$500. However, Judge Narey then also suspended the sentence for the defendant Daniels, except for the payment of the fine, and placed her on parole for a period of six months to Sheriff Harry Dreyer of Buena Vista County, Iowa.

Dr. James A. Swallum, eighty-five, 1318 W. 5th St., Storm Lake, Iowa, on September 27, 1958, also entered a plea of guilty in the case before Judge Narey. Inas-

much as Dr. Swallum had been placed on probation in 1955 by Judge Narey in a previous abortion case, Judge Narey sentenced the defendant to pay a fine of \$500 and then continued his probation in the first case indefinitely. At the time of his plea of guilty Dr. Swallum permanently surrendered his medical license and agreed in writing to discontinue the operation of his hospital in Storm Lake and to dispose of the property. Mr. Richard W. Cooper, County Attorney of Buena Vista County, then filed with the Court an application to revoke the doctor's probation on his first conviction and Judge Narey continued the hearing on this application, in the event that it is found that Dr. Swallum does not comply with the present sentence of the Court. Dr. Swallum, who is a graduate in medicine of Hahnemann Medical College in Chicago in 1901, has practiced in Storm Lake for many years.

The proceedings in the present case were instituted after an investigation by a representative of the Minnesota State Board of Medical Examiners and detectives of the Minneapolis Police Department disclosed that a twenty-two-year-old unmarried St. Paul woman was hospitalized at a St. Paul hospital suffering from the effects of a criminal abortion. The patient gave a signed written statement in which she said she had paid \$500 to the defendant Dorfman and he sent her to Dr. Swallum in Storm Lake, Iowa, to be aborted. Dorfman claimed in the statement taken from him that he mailed the \$500 in cash to Dr. Swallum.

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Book Reviews

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

THE CARE OF THE GERIATRIC PATIENT. Edited by E. W. Cowdry, Ph.D., Sc.D. (Hon.) Director of Wernse Cancer Research Laboratory, Washington University School of Medicine; formerly president of the Gerontological Society and of the Second International Gerontological Congress; chairman of the Medical and Scientific Committee, American Society for the Aged. 438 pages. Price \$8.00, flexible binding. St. Louis: C. V. Mosby Co., 1958.

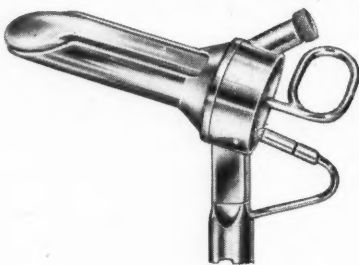
WHAT DO WE KNOW ABOUT HEART ATTACKS. John W. Gofman, M.D. Professor of Medical Physics, University of California, Berkeley. 180 pages. Price \$3.50, cloth. New York: G. P. Putnam's Sons, 1958.

RADIOACTIVE ISOTOPES IN CLINICAL PRACTICE. Edith H. Quimby, Sc.D. Professor of Radiology (Physics), College of Physicians and Surgeons, Columbia University, New York; Sergei Feitelberg, M.D., Director, Physics Department, Mt. Sinai Hospital; Associate Clinical Professor of Radiology, College of Physicians and Surgeons, Columbia University; and Solomon Silver, M.D., Attending Physician, Chief, Thyroid Clinic, The Mt. Sinai Hospital; Associate Clinical Professor of Medicine, College of Physicians and Surgeons, Columbia University, New York. 451 pages. Illus. Price \$10.00, cloth. Philadelphia: Lea & Febiger, 1958.

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TUMORS AND TUMOROUS CONDITIONS OF THE BONES AND JOINTS. Henry L. Jaffe, M.D. Director of Laboratories and Pathologist, Hospital for Joint Diseases, New York; Consultant, Armed Forces Institute of Pathology, Washington, D.C. 629 pages. Illus. Price, \$18.50, cloth. Philadelphia: Lea & Febiger, 1958.

CHEMISTRY FOR MEDICAL TECHNOLOGISTS. Charles E. Seiverd, Chief Technologist, Doctor's Clinical Laboratory; Director of Research, The Horizon Laboratories, Glendale, Arizona. 465 pages. Illus. Price, \$10.75, cloth. St. Louis: C. V. Mosby Co., 1958.

TREATMENT OF BREAST TUMORS. Robert S. Pollack, M.D., F.A.C.S. Clinical Instructor in Surgery, Stanford University School of Medicine; Clinical Instructor in Surgery (Oncology) University of California School of Medicine; Assistant Chief of Surgery, Mt. Zion Hospital; San Francisco, California; Consulting Surgeon, Oakland Veterans Administration Hospital; Consulting Surgeon Oakland Naval Hospital, Oakland, California. 147 pages. Illus. Price \$6.00, cloth. Philadelphia: Lea & Febiger, 1958.

AMID MASTERS OF TWENTIETH CENTURY MEDICINE. By Dr. Leonard G. Rowntree, Chief, Department of Medicine, Mayo Foundation (1922 to 1932). 684 pages. Price, \$11.50. Springfield, Illinois: Charles C Thomas, 1958.

Three chapters of the work, which is an autobiography, deal with the author's experiences at the Mayo Clinic and Mayo Foundation during the period in which clinical investigation was begun at the Mayo Clinic.

Dr. Rowntree, born in London, Ontario, in 1883, studied medicine at the University of Western Ontario. From 1907 to 1916, he was a member of the faculty of the Johns Hopkins University Medical School. In 1916, he became head of the Department of Medicine in the University of Minnesota Medical School, and in 1920 Dr. William J. Mayo asked him to come to Rochester as head of a section of medicine in the Mayo Clinic. This post he assumed on April 1, 1920, and he was named head of the Department of Medicine of the Mayo Foundation on January 1, 1922.

Chapters 15, 16, 17 and 18 (eighty-four pages) of Dr. Rowntree's book, are devoted to the Mayo Clinic and Mayo Foundation. According to the author, the two Mayo brothers "have given the world priceless gifts." These are said to be:

1. A clinic that serves the needs daily of thousands of sick and crippled who turn to it for aid.
2. Group medicine, which is slowly but certainly coming more and more in vogue and infiltrating medical practice everywhere throughout the world.
3. A school of graduate medicine, the largest in the world, which trains doctors for more expert service to the sick, and excels in medical service, medical training and medical research.
4. An institution for the cure of the sick, run on the basis of trusteeship, whereby the money coming from the sick is held, not as a personal fortune, but in trust in perpetuity for the sick, and utilized to serve the sick through superior medical care, more medical research and the better training of doctors.
5. A family spirit of devotion to the sick that has persisted through three generations and endured through more than a century.

BOOK REVIEWS

6. The Mayos sold surgery to the world. Surgery was not accepted willingly until they popularized it. Subsequently they sold it wholesale, so to speak, surgery became a salable commodity throughout the civilized world.

In addition to Dr. W. W. Mayo and Drs. C. H. Mayo, W. J. Mayo and C. W. Mayo, persons such as Mrs. Nora Guthrey, John H. Kahler, Drs. D. C. Balfour, A. Starr Judd, Henry S. Plummer, Christopher Graham, Fred W. Rankin, Waltman Walters, Norman M. Keith, Samuel Amberg, H. F. Helmholtz, Sr., Walter C. Alvarez, Russell M. Wilder, Louis A. Buie, George B. Eusterman, F. A. Willius, J. A. Bargaen, Walter M. Boothby, John S. Lundy, William C. MacCarty and many others are mentioned in Dr. Rowntree's account of his experiences in Rochester. Chapter 18 bears the title, "Clinic Chit Chat." The work of Dr. Edward C. Kendall and Dr. Philip S. Hench with cortisone is discussed in a chapter entitled "We Have Giants with Us in These Days."

Dr. Rowntree left Rochester in September, 1932, to become director of the Philadelphia Institute for Medical Research. Shortly after the end of World War II, he moved to Miami, Florida, where he now resides.

ELECTROCARDIOGRAPHY. By Michael Bernreiter, M.D., F.A.C.P., Assistant Clinical Professor of Medicine, University of Kansas Medical School. 134 pages. Illus. Price, \$5.00. Philadelphia & Montreal: J. B. Lippincott Co., ©1958.

The book is a concise, factual treatise on fundamentals of electrocardiograms with only a minimum of theory to give a logical background to electrographic interpretation without wading through a mass of theory and physics. This is excellent, I believe, for the student, general practitioner, and a quick refresher for the internist. It is divided into eight chapters.

Chapter I is devoted to basic concepts of depolarization and repolarization and the electrophysiological principles of myocardial contraction, delving into the standard leads, unipolar leads, Einthoven triangle, and precordial leads.

Chapter II is a section on cardiac arrhythmias of sinus, auricular, nodal, and ventricular origin. It treats them simply, concisely, and most understandably. It omits ventricular tachycardia and fibrillation.

Chapter III is the section on heart blocks: first, second, and third degrees; bundle branch block; and Wolff-Parkinson-White Syndrome.

Chapter IV treats on hypertrophies right and left and includes a discussion of auricular hypertrophy.

Chapter V deals with ischemia, currents of injury and myocardial necrosis with many electrocardiographic tracings to illustrate the three basic points as apply to myocardial damage and infarction.

Chapter VI is the section on hyperpotassemia, potassium deficiency, calcium excess and calcium deficiency and many electrocardiographic tracings to bring out the main facts.

Chapters VII and VIII deal with effects of digitalis and quinidine on the electrocardiogram and the effects of these two drugs and electrolytes upon the QT interval.

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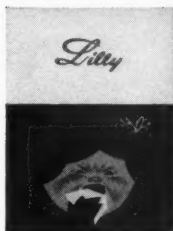
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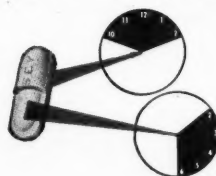
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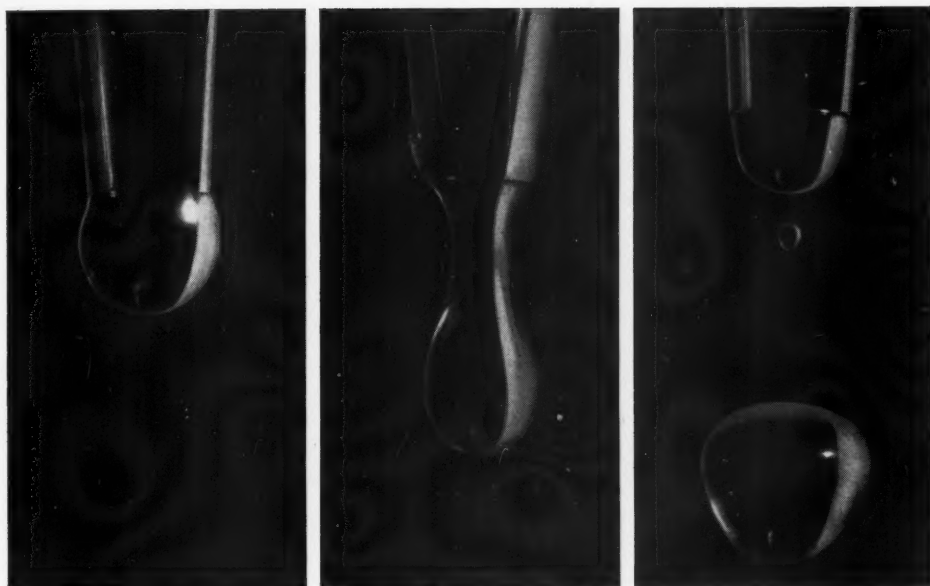
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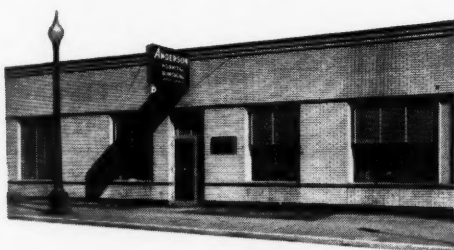
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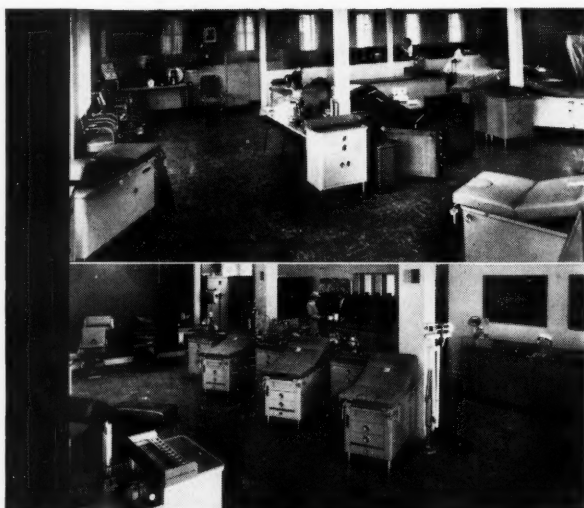


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References:

1. Cribble, H.G., and Jackson, G.G.: Prolonged Treatment of Urinary-Tract Infections with Sulfamethoxypyridazine. *New England J. Med.* 288:1-7, 1958.
2. Editorial: *New England J. Med.* 258:48-49, 1958.

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¹ Friedlander, H. S.: The role of atarazics in cardiology. *Am. J. Card.* 1:395, March 1953.

² Shapiro, S.: Observations on the use of meprobamate in cardiovascular disorders. *Angiology* 8:504, Dec. 1957.

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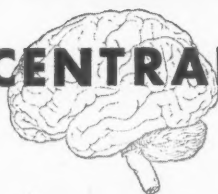
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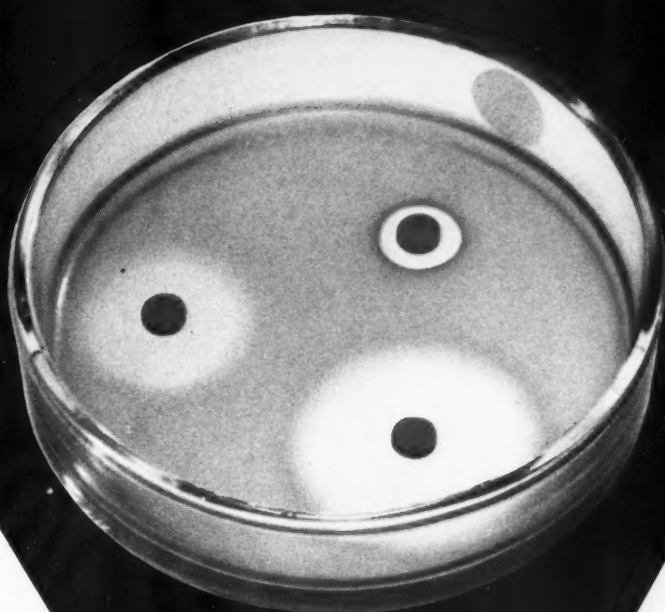
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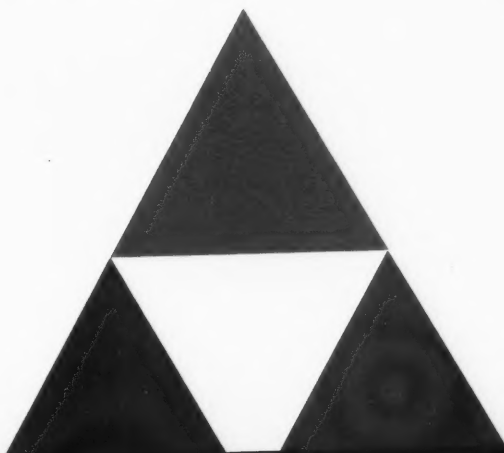
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the control
of all
coccal
infections*

abbott's antibiotic triad



Erythrocin[®]

stearate

(Erythromycin Stearate, Abbott)



indications:

In infections caused by staphylococci, streptococci (including enterococci) and pneumococci. Also, against organisms that have become resistant to other antibiotics. ERYTHROCIN should be used where patients are allergic to penicillin or other antibacterials.

dosage:

Usual adult dose is 250 mg. every six hours; for severe infections, usual dose is 500 mg. every six hours. Child's dose may be reduced in proportion to body weight.

supplied:

In bottles of 25 and 100 Filmtabs (representing 100 and 250 mg. of ERYTHROCIN activity). Also, in cinnamon-flavored oral suspension; 75-cc. bottles. Each 5-cc. teaspoonful represents 100 mg. of ERYTHROCIN activity.

● Filmtab—Film-sealed tablets, Abbott; pat. applied for.

SAFETY FIRST

in
antibiotic
therapy

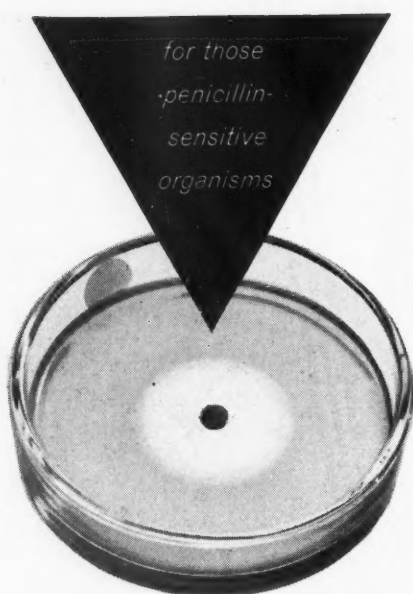


*remarkable effectiveness
against the cocci-
plus a safety record
unmatched in systemic
antibiotic therapy*

Now, after more than six years of extensive use, there has not been a single serious reaction to ERYTHROCIN. Additionally, the often-met problem of resistance has remained unusually low with ERYTHROCIN.

Therapeutically, you'll find ERYTHROCIN highly effective against the majority of coccal organisms. Where severe viral attacks occur, ERYTHROCIN may well be the weapon to counteract those dangerous complications.

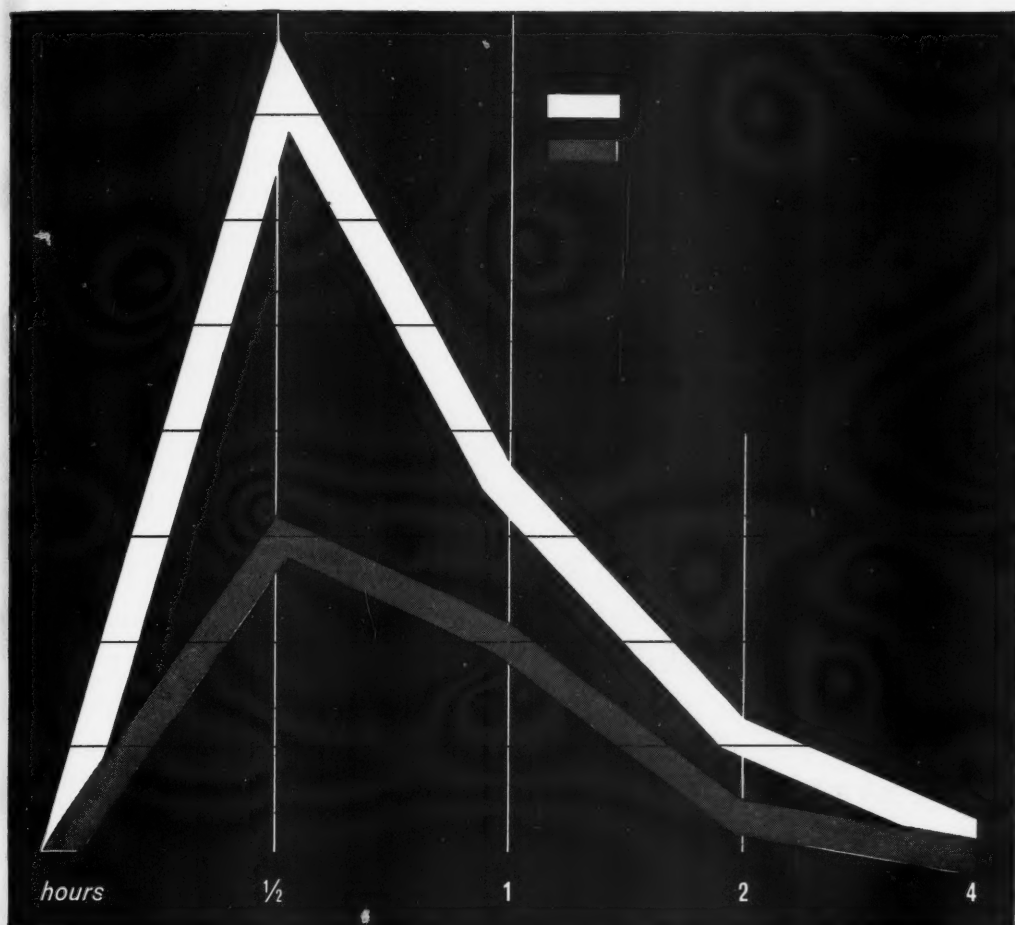
Abbott



the **higher** blood levels of

COMPOCILLIN-VK[®]

Potassium
Penicillin V



NOW, IN BOTH FILMTAB AND ORAL SOLUTION, patients get high penicillin V blood levels with COMPOCILLIN-VK. Note the chart. Concentrations are three times higher than an equivalent dose of potassium penicillin G.

COMPOCILLIN-VK is indicated whenever you desire oral penicillin therapy. In severe infections, oral penicillin should be supplemented by parenteral therapy to obtain the maximum therapeutic response.

Indications:

Against all organisms sensitive to oral penicillin therapy. For prophylaxis and treatment of complications in viral conditions. And as a prophylaxis in rheumatic fever and rheumatic heart disease.

Dosage:

Depending on the severity of the infection, the usual adult dose is 125 to 250 mg. (200,000 to 400,000 units)

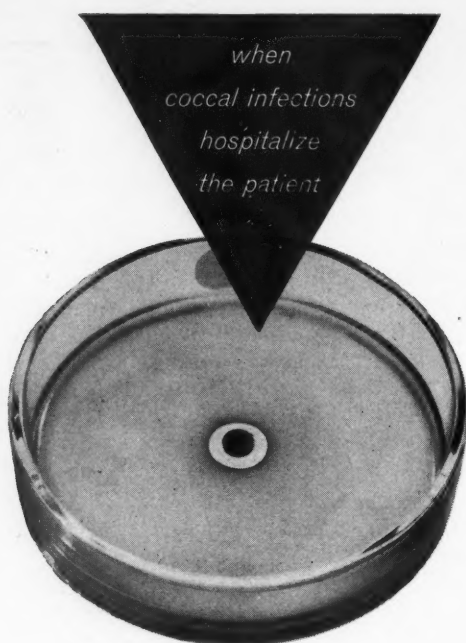
every four to six hours. For children, dosage may be reduced in proportion to body weight.

Supplied:

In Filmtabs, representing 125 mg. (200,000 units) of potassium penicillin V, bottles of 50 and 100. In 250 mg. (400,000 units), bottles of 25 and 100.

For Oral Solution, COMPOCILLIN-VK comes in dry granules for easy reconstitution with water. Cherry-flavored, the granules come in 40-cc. and 80-cc. bottles. Each 5-cc. teaspoon of solution represents 125 mg. (200,000 units) of potassium penicillin V.

COMPOCILLIN-V® Oral Suspension (Ready-Mixed), Hydrabamine Penicillin V, Abbott, comes in 40-cc. and 80-cc. bottles. Each tasty, banana-flavored 5-cc. teaspoonful represents 180 mg. (300,000 units) of penicillin V. At all pharmacies. *Abbott*



**the most effective antibiotic
available against staphylococci**

CRYSTALLIZED

SPONTIN[®]

(RISTOCETIN, ABBOTT)

PREPARED FROM PURE CRYSTALS

**Provides Outstanding Clinical Effectiveness Against Coccal
Infections, Including Resistant Staphylococci and Enterococci¹**

Provides Bactericidal Action Against Coccal Infections¹

Provides Successful Short-Term Therapy In Endocarditis²

Now, after just 12 months, SPONTIN has become an outstanding drug of choice against resistant staphylococci, and in other serious coccal infections.

Six papers presented at the Antibiotics Symposium¹ reported the effectiveness of SPONTIN against resistant staphylococcal infections. Clinical responses involved enterococcal endocarditis, staphylococcal pneumonias and staphylococcal bacteremias. Many of these patients were going downhill steadily—in spite of treatment by other antibiotics.

Toxicity? Careful attention to dosage recommendations has practically eliminated toxicity and side effects as serious obstacles to therapy. Also, recent improvements have been made in the manufacture of SPONTIN; the drug is now made from pure crystals. A recent report³ in the Journal of the American Medical Association concluded, "It is our opinion that, if proper precautions are observed, ristocetin is a safe and potent agent to employ in the treatment of staphylococcal infections."

If you do not have the revised literature on this lifesaving antibiotic, please contact your Abbott Representative soon; or write direct to Abbott Laboratories, North Chicago, Illinois.

INDICATIONS: Against a wide range of staphylococcal, streptococcal, pneumococcal and enterococcal infections. A drug of choice for treating serious infections, particularly those caused by organisms that resist all other antibiotics.

DOSAGE: Administered intravenously. In pneumococcal, streptococcal and enterococcal infections, a dosage of 25 mg./Kg. will usually be adequate. Majority of staphylococcal infections will be controlled by 25 to 50 mg./Kg. per day. It is recommended that the daily dosages be divided into two or three equal parts at eight- or 12-hour intervals.

SUPPLIED: In vials containing a sterile, lyophilized powder, representing 500 mg. of ristocetin A activity. Be sure your hospital has it stocked.

Abbott

1. Sixth Annual Symposium on Antibiotics, Washington, D. C., Oct. 15, 16, 17, 1958.

2. Antibiotics Annual, 1957-58, p. 187-98.

3. J.A.M.A., 167:1584, July 26, 1958.



In potentially-
serious
infections...

CHLORAMPHENICOL, REG. U. S. PAT. OFF.

CHLORAMPHENICOL, REG. U. S. PAT. OFF.—THE URSOH
BRAND OF TETRACYCLINE

CHLORAMPHENICOL, REG. U. S. PAT. OFF.—THE URSOH
BRAND OF CRYSTALLINE MONOSODIUM SODIUM

TRADEMARK

The Upjohn Company, Kalamazoo, Michigan

ly-
ous

...take new

Panalba

(Tetracycline Phosphate plus Albamycin[®])

your

broad-spectrum

antibiotic

of first resort

effective against more
than 30 common pathogens,
even including
resistant staphylococci.

Two forms

Two capsules, bottles of 10 and 100 capsules. Each capsule contains:

Tetracycline phosphate (tetracycline phosphate
equivalent to tetracycline hydro-
chloride) 250 mg.
Albamycin (as novobiocin sodium) 125 mg.

Oral Suspension: Flavored Granules. When
syrup is added to fill the bottle,
each teaspoonful (5 cc.) contains:

Tetracycline (as tetracycline) equivalent to tetra-
cycline hydrochloride 125 mg.
Albamycin (as novobiocin calcium) 62.5 mg.
Syrup (sucrose) 100 mg.

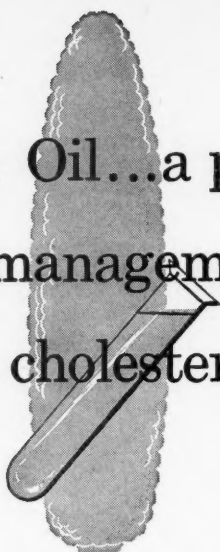
How to take

Adult dosage is 2 capsules q.i.d.

Children

For treatment of moderately acute infec-
tions in infants and children, the recom-
mended dose is 1 teaspoonful per 15 to
20 lb. of weight per day, administered
in 4 equal doses. Severe or prolonged
infections require higher doses. Dosage for
infants and children is 3 or 4 times daily,
depending on the type and severity of the in-

Mazola® Corn Oil...a palatable food effective in the management and control of serum cholesterol levels



Extensive clinical tests show that when the diet contains an adequate amount of Mazola Corn Oil, serum cholesterol levels tend to be normal...high blood cholesterol levels are lowered, normal levels maintained.

Fortunately for both physician and patient, Mazola Corn Oil is not only rich in unsaturated fatty acids, it is also a delicious food. It becomes an enjoyable and normal part of the patient's daily meals—no complicated or special diet is required.

Here is a therapy easy for you to prescribe, easy and pleasant for your patients to follow.

Nutritional authorities generally recommend that fats should provide no more than 30% of the total calories. In cholesterol-lowering diets from one-third to one-half of these fats should be unsaturated, such as in Mazola Corn Oil.

IN COOKING OR SALADS

Mazola Corn Oil is a superlative cooking oil as well as a delicious salad oil. Adequate amounts can be eaten daily—in a wide variety of salad dressings and in a great number of fried and baked foods.

MOST EFFECTIVE

Pure, clear, bland and odorless. Mazola Corn Oil is stable and dependable, providing the full measure of cholesterol-lowering unsaturated fatty acids characteristic of corn oil.

ECONOMICAL

Mazola Corn Oil is sold in grocery stores throughout the country, is available everywhere. Its comparatively low cost makes it as economical as it is effective.



MAZOLA® CORN OIL is a rich source of unsaturated fatty acids. It can form a regular part of the diet without major changes in eating habits to provide an effective unsaturated oil as a part of the daily meals.

EACH TABLESPOONFUL OF MAZOLA CORN OIL PROVIDES NOT LESS THAN:

Linoleic Acid	7.4 Gm.
Sitosterole	130 mg.
Natural Tocopherols	15 mg.

TYPICAL AMOUNTS PER DIET

For a 3600 calorie diet	3 tablespoonsful
For a 3000 calorie diet	2.5 tablespoonsful
For a 2000 calorie diet	1.5 tablespoonsful

*Reg. U. S. Pat. Off.

ANNOUNCING

a new order of magnitude in corticosteroid therapy!

The great corticosteroid era

opened ten years ago

with the introduction of CORTONE® (cortisone).

Today, MERCK SHARP & DOHME proudly

presents the crowning

achievement of the first corticosteroid

decade—DECADRON (dexamethasone)

—a new and unique compound, which

brings a new order of magnitude

to corticosteroid therapy



Decadron

to treat more patients more effectively

MSD MERCK SHARP & DOHME

a new order of magnitude

In Anti-Inflammatory Potency

DECADRON "possesses greater anti-inflammatory potency per milligram than any steroid yet produced,"¹ and is "the most potent steroid thus far synthesized."² Milligram for milligram, it is, on the average, 5 times more potent than 6-methylprednisolone or triamcinolone; 7 times more potent than prednisone; 28 times more potent than hydrocortisone; and 35 times more potent than cortisone.

In Dosage Reduction

Thanks to this unprecedented potency, DECADRON is "highly effective in suppressing the manifestations of rheumatoid arthritis when administered in remarkably small daily milligram doses."³ In a number of cases, doses as low as 0.5-0.8 mg. proved sufficient for daily maintenance. The average maintenance dosage in rheumatoid arthritis is about 1.5 mg. daily.

In Elimination and Reduction of Side Effects

Virtual absence of diabetogenic activity, edema, sodium or water retention, hypertension, or psychic reactions has been noted with DECADRON.^{1,2,3,4} Other "classical" reactions were less frequent and less severe. DECADRON showed no increase in ulcerogenic potential, and digestive complaints were rare. Nor have there been any new or "peculiar" side effects, such as muscle wasting, leg cramps, weakness, depression, anorexia, weight loss, headache, dizziness, tachycardia or erythema. Thus DECADRON introduces a new order of magnitude in safety, unprecedented in corticosteroid therapy.

In Therapeutic Effectiveness

With DECADRON, investigators note "a decided intensification of the anti-inflammatory activity"³ and antirheumatic potency.⁴ Clinically, this was manifested by a higher degree of improvement in many patients, previously treated with prednosteroids,³ and by achievement of satisfactory control in an impressive number of recalcitrant cases.^{3,4}

In Therapeutic Range

More patients can be treated more effectively with DECADRON. Its higher anti-inflammatory potency frequently brings relief to cases resistant to other steroids. Virtual freedom from diabetogenic effect in therapeutic dosage permits treatment of many diabetics without an increase in insulin requirements. Absence of hypertension and of sodium and fluid retention allows effective therapy of many patients with cardiovascular disorders. Reduction in the incidence and severity of many side effects extends the benefits of therapy to numerous patients who could not tolerate other steroids. And a healthy sense of well-being, reported by nearly all patients on DECADRON, assures greater patient cooperation.

References:

1. Boland, E.W.: California Med. 58:417 (June) 1958.
2. Bunim, J.J., et al.: Arthr. & Rheum. 1:313 (Aug.) 1958.
3. Boland, E.W., and Headley, N.E.: Paper read before the Am. Rheum. Assoc., June 21, 1958, San Francisco, Cal.
4. Bunim, J.J., et al.: Paper read before the Am. Rheum. Assoc., June 21, 1958, San Francisco, Cal.

To treat more patients more effectively
in all allergic and inflammatory disorders
 amenable to corticosteroid therapy

DOSAGE AND ADMINISTRATION

With proper adjustment of dosage,
 treatment may ordinarily be
 changed over to DECADRON
 from any other corticosteroid
 on the basis of the following
 milligram equivalence:

One 0.75 mg. tablet of DECADRON (dexamethasone) replaces:

↓ One 4 mg.	↓ One 5 mg.	↓ One 20 mg.	↓ One 25 mg.
tablet of methylprednisolone or triamcinolone	tablet of prednisolone or prednisone	tablet of hydrocortisone	tablet of cortisone

SUPPLIED:

As 0.75 mg. scored pentagon-shaped tablets; also as 0.5 mg. tablets to provide maximal individualized flexibility of dosage adjustment.

Detailed literature is available to physicians on request.

*DECADRON is a trademark of Merck & Co., Inc.
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Merck Sharp & Dohme Philadelphia 1, Pa.
 Division of Merck & Co., Inc.



Decadron^{*}

DEXAMETHASONE

ANNOUNCING

a new order of magnitude in corticosteroid therapy!

The great corticosteroid era
opened ten years ago
with the introduction of CORTONE® (cortisone).

Today, MERCK SHARP & DOHME proudly
presents the crowning
achievement of the first corticosteroid
decade—DECADRON (dexamethasone)
—a new and unique compound, which
brings a new order of magnitude
to corticosteroid therapy



Decadron

DEXAMETHASONE

to treat more patients more effectively



MERCK SHARP & DOHME

Product U.S.A.



FAST-ACTING ORAL BROAD-SPECTRUM THERAPY. The modern blue and yellow ACHROMYCIN V Capsules, combining equal parts of pure crystalline ACHROMYCIN Tetracycline HCl and Citric Acid, provide unsurpassed oral broad-spectrum therapy.

Speed of absorption adds new emphasis to the benefits of true broad-spectrum action, minimum side effects and wide range effectiveness that have established ACHROMYCIN as an antibiotic of choice for decisive control of infection.

REMEMBER THE V WHEN SPECIFYING ACHROMYCIN V. New blue and yellow capsules (sodium-free)—250 mg. with 250 mg. citric acid, and 100 mg., with 100 mg. citric acid.

ACHROMYCIN V dosage; Recommended basic oral dosage is 6-7 mg. per lb. body weight per day. In acute, severe infections often encountered in infants and children, the dose should be 12 mg. per lb. body weight per day. Dosage in the average adult should be 1 Gm. divided into four 250 mg. doses.

ACHROMYCIN* V CAPSULES

Tetracycline HCl and Citric Acid Lederle

LEDERLE LABORATORIES, a Division of AMERICAN CYANAMID COMPANY, Pearl River, New York

*Reg. U. S. Pat. Off.



Exactly how does new Halodrin* restore the “premenopausal prime” in postmenopausal women?

Webster defines “prime” as the period of greatest health, strength, and beauty. In a woman, these are the childbearing years between puberty and menopause—the years when her hormone production is highest.

The inevitable reduction in this hormone production as she enters the menopause often results in physical discomfort in the form of hot flushes, nervousness, insomnia, or a multiplicity of other symptoms with which you are familiar. Superimposed on this physical picture is the psychic trauma brought on by this unavoidable evidence of aging. The thing that brings her to a physician is simply that she “feels bad.”

You can't make her 35 again—but the odds are good that you can make her feel like it! The secret is a combination of reassurance and hormones. The exact form and amount of the former defy objective analysis, but the latter can now be provided with scientific precision. Reduced to essentials, here is the explanation of exactly how hormones—in the form of Upjohn's new Halodrin—restore the “premenopausal prime.”

The normal premenopausal woman excretes estrogens in the urine in the form of estradiol, estrone, and estriol, in an approximate 28-day average ratio of 39:15:46. Starting with this urinary excretion of estrogens, it is possible to calculate backwards and estimate the amount of estradiol that must have been secreted endogenously in order to produce these urinary levels. This is possible because the proportion of estrogens which appears in the urine following parenteral administration has been established in castrated women.

On this basis, the average endogenous output of estrogens is about 160 micrograms per day during a menstrual cycle, and 80 micrograms per day in postmenopausal women (see chart opposite). Therefore, the restoration of the “premenopausal prime” in the postmenopausal woman requires the replacement of approximately the equivalent of the 80 micrograms of estradiol per day that she no longer secretes endogenously.

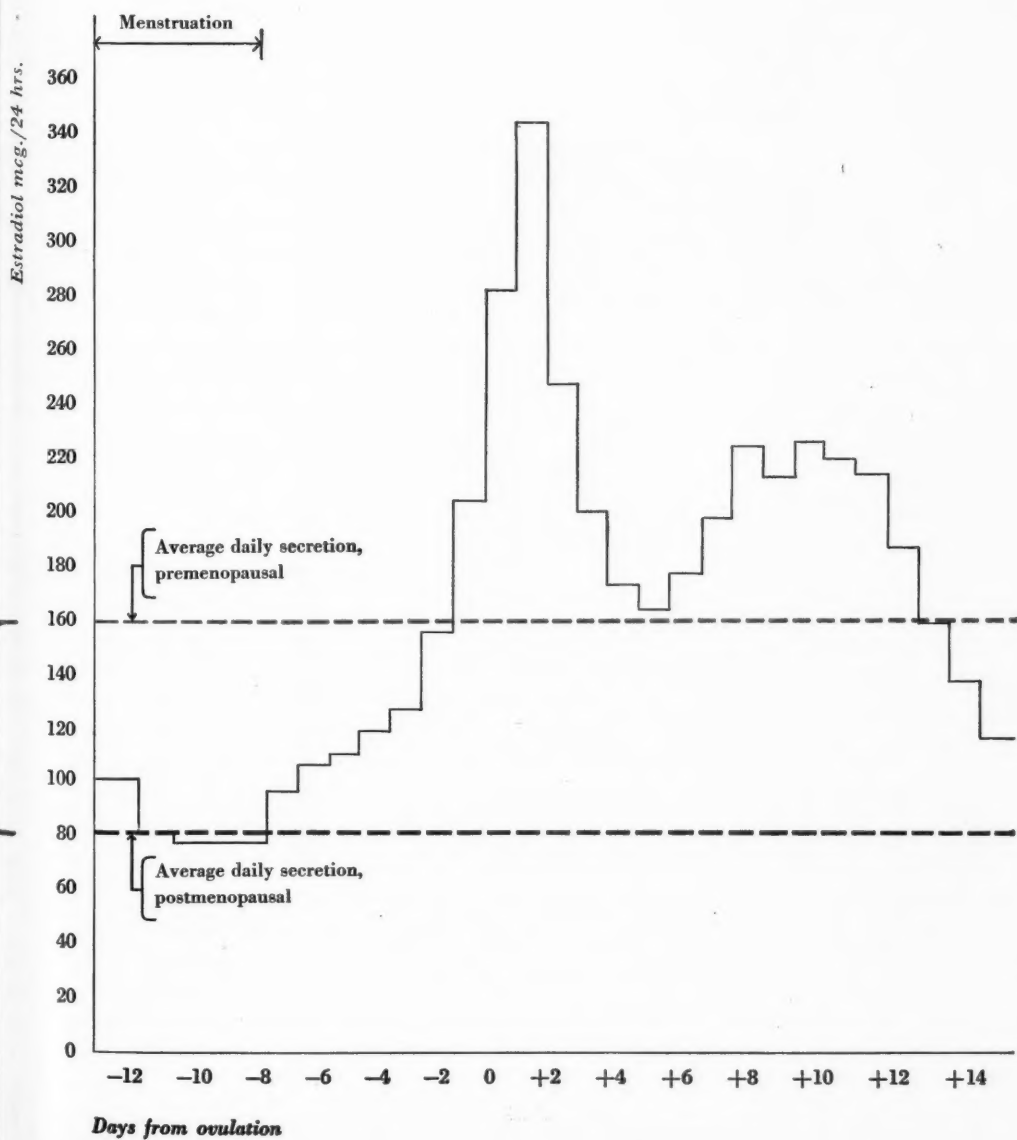
Oral ethinyl estradiol is about 2 to 2½ times as potent as parenteral estradiol. Therefore, the replacement of 80 micrograms of endogenous estradiol production per day is accomplished by the oral administration of 32 to 40 micrograms of ethinyl estradiol per day.

Each Halodrin tablet contains 20 micrograms of ethinyl estradiol, which means that the recommended dosage of 2 tablets per day provides 40 micrograms of ethinyl estradiol. This offsets the loss of 80 micrograms of endogenous estradiol production in the menopausal woman; i.e., restores the “premenopausal prime.”

Each Halodrin tablet also contains 1 mg. of Upjohn-developed Halotestin* (fluoxymesterone)—the most potent oral androgen known. The primary purpose is to “buffer” the ethinyl estradiol just enough to prevent breakthrough bleeding, which is obviously undesirable in the menopause. It also exerts other beneficial hormonal effects, one of which, in common with ethinyl estradiol, is a powerful anabolic action so desirable in patients of advanced years.

Endogenous estrogen secretion (mcg./24 hours)

(calculated from average 24-hour urinary excretion of estradiol, estrone, and estriol)



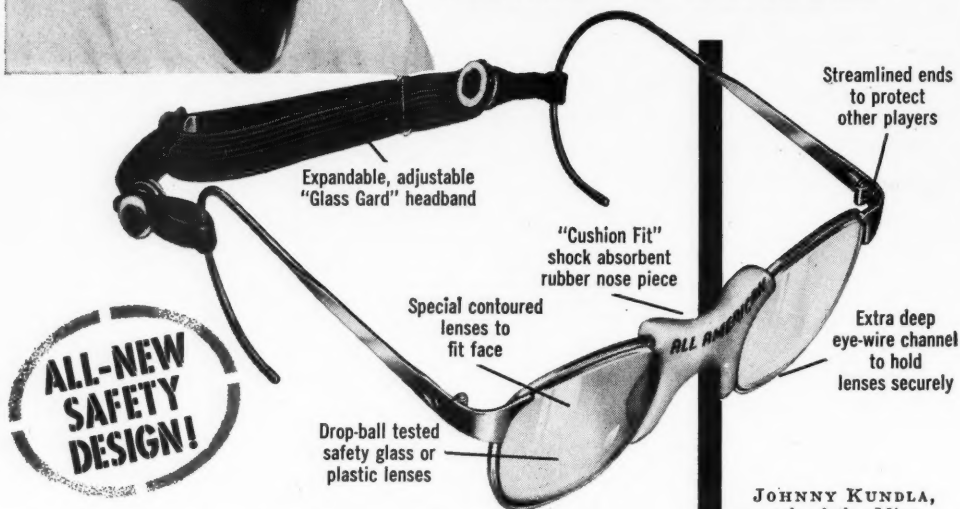


*provide protection for
your athlete-patients*

with the ALL-NEW

ALL AMERICAN[®]

ATHLETIC GLASSES



**ALL-NEW
SAFETY
DESIGN!**

• ALL AMERICAN ATHLETIC GLASSES are a wise investment in eye safety for athletes. These all-new glasses have been designed by BENSON to provide the finest in protection without interfering with performance . . . *assuring complete player confidence!* Note the specific design features above — and you'll agree that your athlete-patients who wear glasses deserve this kind of all-around protection.

Advertisements reaching thousands of athletic coaches and athletes around the country will advise "Order through your doctor." Be ready — examine a complete sample at nominal cost. Write today . . .

JOHNNY KUNDLA, coach of the Minneapolis Lakers, says — "All American Athletic Glasses provide the utmost in eye protection!"

•
SIZES

44-20	47-20
44-23	47-23

Temples available from 6" through 7" cable.



BENSON OPTICAL COMPANY

Executive Offices • Medical Arts Building, Minneapolis
specialists in prescription optics since 1913

COMPLETE LABORATORIES CONVENIENTLY LOCATED IN UPPER MIDWEST CITIES

IN URTICARIA AND PRURITUS

VISTARIL*

HYDROXYZINE PAMOATE



A PSYCHOTHERAPEUTIC ANTIHISTAMINE

(as designated by A.M.A. Council on Drugs, 1959)

SPECIFIC ANTIHISTAMINIC ACTION in the treatment of a variety of skin disorders commonly seen in your practice.

"While some of the tranquilizers are only partially effective as far as antiallergic activities are concerned... [hydroxyzine] has been found, by comparison, to be the most potent thus far..."¹

"The most striking results were seen in those patients with chronic urticaria of undetermined etiology."²

PLUS

PSYCHOTHERAPEUTIC POTENCY for the relief of anxiety and tension.

The psychotherapeutic effectiveness of hydroxyzine (VISTARIL) was confirmed in a series of 479 patients suffering from a wide variety of dermatoses, including atopic dermatitis, neurodermatitis, psoriasis, lichen planus, nummular eczema, dyshidrosis, pruritus ani and vulvae, and rosacea. "Adverse reactions were minimal."³

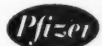
RECOMMENDED ORAL DOSAGE: 50 mg. q.i.d. initially; adjust according to individual response.

VISTARIL Capsules: 25 mg., 50 mg., 100 mg.

VISTARIL Parenteral Solution: 10 cc. vials and 2 cc. Steraject® Cartridges. Each cc. contains 25 mg. hydroxyzine (as the HCl).

REFERENCES:

1. Eisenberg, B. C.: Clinical Medicine 5:897-904 (July) 1958.
2. Feinberg, A. R., et al.: J. Allergy 29:358 (July) 1958.
3. Robinson, H. M., et al.: So. Med. J. 50:1282 (Oct.) 1957.



Science for the world's well-being

Pfizer Laboratories Division, Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y.

*Trademark



THE RATIONALE
FOR THE
USE OF VITAMINS
IN
FORESTALLING
INFECTIONS

Many clinicians believe that good nutrition plays a significant role in preventing bacterial infections, and that immunity depends on adequate vitamin levels. Tisdall¹ states that "a low intake of a number of vitamins, a low intake of minerals, and a change in the quality of protein can all lower resistance to infection."

Other studies show the important role of the B vitamins in antibody formation. Thus, *Nutrition Reviews*² reports: "Present evidence indicates that certain B vitamins, notably pyridoxine, pantothenic acid and folacin, play a significant role in antibody synthesis." According to Pollack and Halpern,³ "Under-nutrition leads to increased susceptibility to infection and decreased resistance to established disease." And "vitamin deficiency states also may adversely influence circulating antibodies."

Halpern⁴ reports that "good nutrition is important for optimal resistance to infection, for a superior tissue capability to cope with disease and injury, and for maximum antibody production . . . nutrition participates in the prophylaxis against most acute infections . . ."

And while MacBryde⁵ feels that evidence is lacking to support the view that a higher than normal intake of vitamins will improve resistance to infection, he also states: "Restoration of nutrition to normal exerts a favorable influence on practically all disease conditions . . . Often the outcome will depend more upon the correction of the malnutrition than upon any therapy directed toward the malady."

THERAGRAN

SQUIBB VITAMINS FOR THERAPY

*now expanded to include additional essential vitamins—
and at no extra cost to your patients*

Each Theragran Capsule supplies:

Vitamin A	25,000 U.S.P. units
Vitamin D	1,000 U.S.P. units
Thiamine Mononitrate	10 mg.
Riboflavin	10 mg.
Niacinamide	100 mg.
Ascorbic Acid	200 mg.
Pyridoxine Hydrochloride	5 mg.
Calcium Pantothenate	20 mg.
Vitamin B ₁₂ Activity Concentrate	5 mcg.

Also Available: THERAGRAN Liquid, bottles of 4 ounces; THERAGRAN Junior bottles of 30 and 100 capsules; and THERAGRAN-M (Squibb Vitamin-Minerals for Therapy), bottles of 30, 60, 100 and 1,000 capsule-shaped tablets.

Dosage: 1 or more capsules daily as indicated.

Supply: Family Packs of 180. Bottles of 30, 60, 100 and 1,000.

References: 1. Tisdall, F. F.: *Clinical Nutrition*, ed. by Joliffe, N.; Tisdall, F. F., and Cannon, P. R.: Paul B. Hoeber, Inc., New York, 1950, p. 748. 2. *Nutrition Reviews*, 15:47, (Feb.) 1957. 3. Pollack, H., and Halpern, S. L.: *Therapeutic Nutrition*, National Academy of Sciences and National Research Council, Washington, D. C., 1952, p. 18. 4. Halpern, S. L.: *Ann. N. Y. Acad. Science* 63:147, (Oct. 28) 1955. 5. MacBryde, C. N.: *Signs and Symptoms*, J. B. Lippincott Co., Phila., 3rd Ed. 1957, p. 818.



*Theragran® is a Squibb trademark.

whenever
he
starts
to

CHEW

he's
ready
for

Delectavites®

*New vitamin-mineral supplement
in delicious chocolate-like nuggets*



There's nothing easier to give
or take—
than Delectavites.
A real treat...
the children's favorite...
tops with adults, too.



WHITE LABORATORIES, INC.
KENILWORTH, N. J.

Each nugget contains:

Vitamin A.....	5,000 Units*
Vitamin D.....	1,000 Units*
Vitamin C.....	75 mg.
Vitamin E.....	2 Units†
Vitamin B-1.....	2.5 mg.
Vitamin B-2.....	2.5 mg.
Vitamin B-6.....	1 mg.
Vitamin B-12 Activity.....	3 mcg.
Panthenol.....	5 mg.
Nicotinamide.....	20 mg.
Folic Acid.....	0.1 mg.
Biotin.....	30 mcg.
Rutin.....	12 mg.
Calcium Carbonate.....	125 mg.
Boron.....	0.1 mg.
Cobalt.....	0.1 mg.
Fluorine.....	0.1 mg.
Iodine.....	0.2 mg.
Magnesium.....	3.0 mg.
Manganese.....	1.0 mg.
Molybdenum.....	1.0 mg.
Potassium.....	2.5 mg.

*U.S.P. units †Int. units

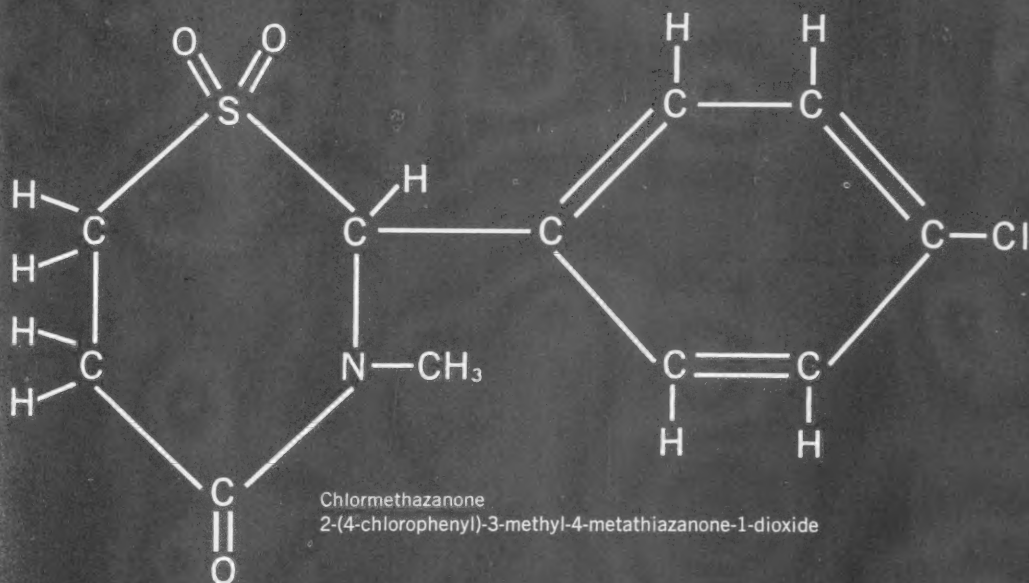
Dose: One Nugget per day
 Supplied: Boxes of 30—one month's supply
 Boxes of 90—three month's supply or family package.

Winthrop Laboratories
introduces

Trancopal[®]

BRAND OF CHLORMETHAZANONE

a completely new major chemical contribution to therapeutics



*unrelated chemically to any
other drug in current use*

designed to be equally effective as both
 a **MUSCLE RELAXANT**
 a **TRANQUILIZER**

Trancopal

the first true "TRANQUILAXANT"™*

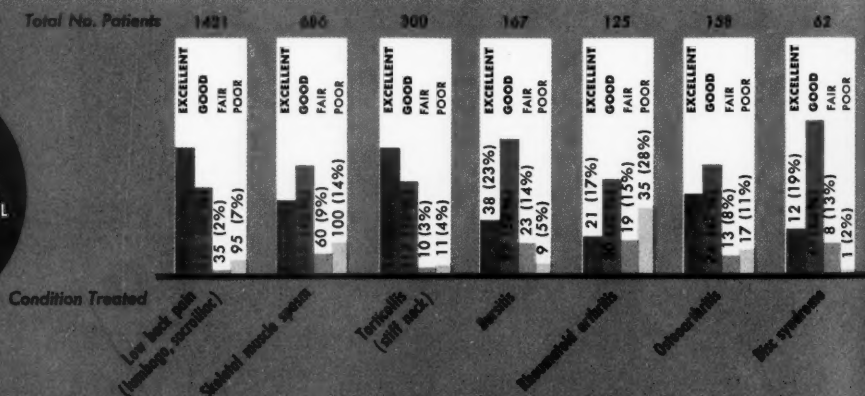
offering new freedom for your patients...from muscle spasm,
 from tension and anxiety, from side effects

*tran-qui-lax-ant (tran'kwi-lak'sant)
 [$< L.$ *tranquillus*, quiet; *L. laxare*, to
 loosen, as the muscles]

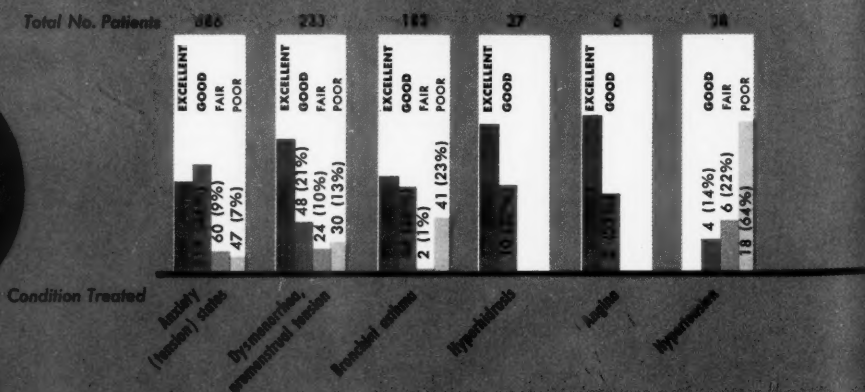
EXCEEDS OLDER DRUGS UP TO 4 TIMES IN PERCENTAGE OF CLINICAL EFFICACY (Lichtman)

The results of clinical studies of over 4000 patients by 105 physicians demonstrate that TRANCOPAL often is effective when other drugs have failed. From these studies it is clear that TRANCOPAL probably can provide more help for a greater number of tense, spastic, and/or emotionally upset patients than any other chemotherapeutic agent in current use.

TRANCOPAL IN MUSCULOSKELETAL DISORDERS



TRANCOPAL IN PSYCHOGENIC DISORDERS



TRANCOPAL...the first true "tranquilaxant"

Both a muscle relaxant and a calmative agent.

In musculoskeletal disorders, 91 per cent effective.

In anxiety and tension states, 93 per cent effective.

Lower incidence of side effects than with zoxazolamine, methocarbamol or meprobamate.

No known contraindications. Blood pressure, pulse rate, respiration and digestive processes unaffected by therapeutic dosage. No effects on hematopoietic system or liver and kidney function.

Low toxicity. In animals, even less toxic than aspirin.

No gastric irritation. Can be taken before meals.

No clouding of consciousness, no euphoria or depression.

No perceptible soporific effect, even in high dosage.

CLINICAL RESULTS IN 4092 PATIENTS **



MUSCULOSKELETAL CONDITIONS
2929 Patients

+

=



PSYCHOGENIC CONDITIONS
1163 Patients



TOTAL 4092 Patients

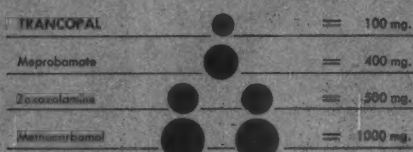
MAJOR IMPROVEMENT
84%

**Cooperative Study, Department of Medical Research, Winthrop Laboratories

Compare Trancopal with 3 widely used central relaxants

FOR ACTIVITY

Single Dose

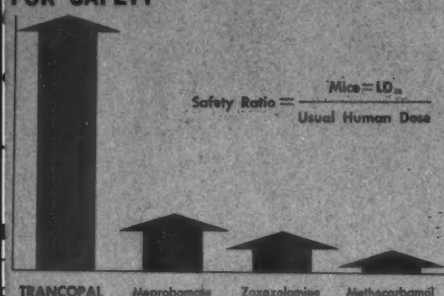


Daily Dose

Same as above, t.i.d.

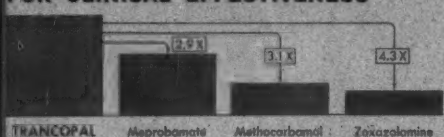
Considering the usual human dose, Trancopal, the first true "tranquilaxant," is four to ten times as potent per milligram.

FOR SAFETY



Comparative pharmacologic tests showed that Trancopal is up to thirteen times as safe, or up to thirteen times less toxic. The measure of safety was the LD₅₀ in mice/usual human dose.

FOR CLINICAL EFFECTIVENESS



A clinical comparison in low back pain, torticollis, bursitis and anxiety states showed that Trancopal is up to four times as effective. Each of 40 patients received all four drugs in random rotation for several days. While each of the four drugs gave some relief, only the one providing the most effective relief was recorded.

INDICATIONS

Musculoskeletal	Psychogenic
Low back pain (lumbago)	Anxiety and tension states
Neck pain (torticollis)	Dysmenorrhea
Bursitis	Premenstrual tension
Rheumatoid arthritis	Asthma
Osteoarthritis	Emphysema
Disc syndrome	Angina
Fibrositis	
Joint disorders (ankle sprain, tennis elbow, etc.)	Neurologic
Myositis	Muscle spasm in paralysis agitans, multiple sclerosis, hemiplegia, poliomyelitis
Postoperative myalgias	

TRANCOPAL thoroughly evaluated clinically

"In the treatment of conditions associated with skeletal muscle spasm there was a high percentage of satisfactory results (excellent, good or fair) in 310 patients (94%) out of 331 treated . . . In 120 patients with simple anxiety or tension states results were satisfactory in 114 (95%). Dosage of chlormethazone in all cases was 100 mg. t.i.d. As well as relieving the anxiety or tension state, chlormethazone also allowed these patients to resume their usual occupations."

(Lichtman)

"The effect of this preparation in these cases [skeletal muscle spasm] was excellent and prompt . . ."

Trancopal "... was effective in relieving the symptoms of anxiety ... [with a] profile of pharmacologic actions similar to meprobamate . . ."

(Mullin and Epifano)

"We have just started using it [Trancopal] for relaxing spastic musculature and are very much encouraged."

(Baker)

Trancopal

the first true "TRANQUILAXANT"

Dosage: One Caplet (100 mg.) orally three or four times daily. Relief of symptoms occurs in fifteen to thirty minutes and lasts from four to six hours.

Supplied: Trancopal Caplets® (scored) 100 mg., bottles of 100.

Winthrop Laboratories • New York 18, N. Y.

• Baker, A. B.: *Modern Med.* 26:140, April 15, 1958. • Cohen, A. I.: In preparation. • Cooperative Study, Department of Medical Research, Winthrop Laboratories. • Gesler, R. M., and Coulston, F.: *Toxicol. & Appl. Pharmacol.* To be published. • Gesler, R. M., and Surrey, A. R.: *J. Pharmacol. & Exper. Therap.* 122:24A, Jan., 1958. • Gesler, R. M., and Surrey, A. R.: *J. Pharmacol. & Exper. Therap.* 122:517, April, 1958. • Lichtman, A. L.: *Kentucky Acad. Gen. Pract. J.* 4:28, Oct., 1958. • Mullin, W. G., and Epifano, Leonard: To be published. • Surrey, A. R.; Webb, W. G., and Gesler, R. M.: *J. Am. Chem. Soc.* 80:3469, July 5, 1958.

you were to examine these patients



could you
detect
the asthmatic on
Medrol*

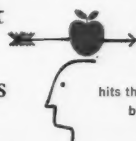
Probably not. Not without a history.

First, because he's more than likely symptom-free.

Second, because he shows none of the disturbing changes in appearance, behavior or metabolism sometimes associated with corticotherapy.

Even your practiced clinical eye would find it difficult to spot someone else's Medrol patient.

But in your own patients, you could see the advantages of Medrol right away. Why not try it?



Medrol
hits the **disease**,
but spares the
patient

Upjohn

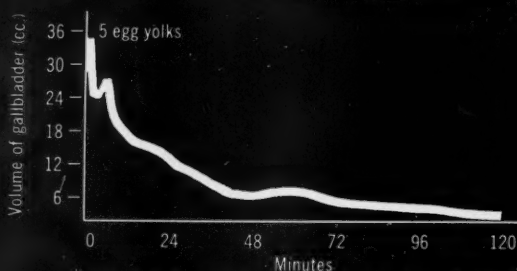
Upjohn Company, Kalamazoo, Michigan

*TRADEMARK, REG. U. S. PAT. OFF.—METHYLPREDNISOLONE, UPJOHN

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Adapted from Wright, S.: Applied Physiology, ed. 8. London, Oxford University Press, 1947, p. 734.

What's wrong with the term "emptying of the gallbladder"?

The gallbladder discharges bile by fractional evacuation. It is not emptied completely at any one time even following a fatty meal.

Source—Lichtman, S. S.: Diseases of the Liver, Gallbladder and Bile Ducts, ed. 3, Philadelphia, Lea & Febiger, 1953, vol. 2, p. 1177.

routine physiologic support for "sluggish" older patients

DECHOLIN® one tablet t.i.d.
therapeutic bile

increases bile flow and gallbladder function—combats bile stasis and concentration...helps thin gallbladder contents.

corrects constipation without catharsis—prevents colonic dehydration and hard stools...provides effective physiologic stimulant.

DECHOLIN tablets (dehydrocholic acid, AMES) 3¾ gr. Bottles of 100 and 500.



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TETRACYCLINE-ANTIHISTAMINE-ANALGESIC COMPOUND **LEDERLE**

A versatile, well-balanced formula for treating common upper respiratory infections, particularly during respiratory epidemics; when bacterial complications are observed or are likely; when patient's history is positive for recurrent otitic, pulmonary, nephritic, or rheumatic involvement.

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Available on prescription only.

Adult dosage for ACHROCIDIN Tablets and new caffeine-free ACHROCIDIN Syrup is two tablets or teaspoonfuls of syrup three or four times daily. Dosage for children according to weight and age.

TABLETS (sugar coated)

Each Tablet contains:

ACHROMYCIN® Tetracycline	125 mg.
Phenacetin	120 mg.
Caffeine	30 mg.
Salicylamide	150 mg.
Chlorothen Citrate	25 mg.

Bottles of 24 and 100.

SYRUP (lemon-lime flavored)

Each teaspoonful (5 cc.) contains:

ACHROMYCIN® Tetracycline equivalent to tetracycline HCl	125 mg.
Phenacetin	120 mg.
Salicylamide	150 mg.
Ascorbic Acid (C)	25 mg.
Pyrimidine Maleate	15 mg.
Methylparaben	4 mg.
Propylparaben	1 mg.

Bottle of 4 oz.

- adenitis
- sinusitis
- otitis
- bronchitis
- pneumonitis

prevents the multifarious sequelae



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as a local anesthetic
or a topical anesthetic*

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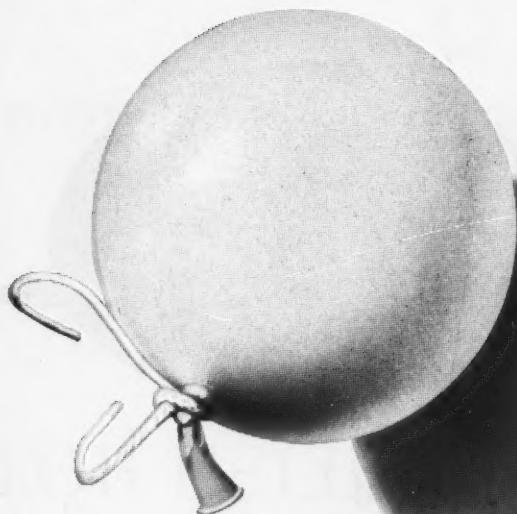


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Urinary blockage
and stasis are
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predisposing
etiology in nearly
all cases of
urinary tract
infection."¹

in urinary tract infection when stasis is the basis

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brand of nitrofurantoin

"FURADANTIN is especially recommended for conditions where there is retained urine. . . . This is because the FURADANTIN is excreted in large amounts in the urine."²

"Nitrofurantoin [FURADANTIN] may be used for protracted periods for the suppression of infection in the urinary tract, even in the presence of probable obstruction . . . it may provide prolonged relief from symptoms and permit better selection of the proper time for surgical or manipulative procedures."³

AVERAGE ADULT FURADANTIN DOSAGE: 100 mg. q.i.d. with meals and with food or milk on retiring. **SUPPLIED:** Tablets, 50 and 100 mg.; Oral Suspension, 25 mg. per 5 cc. tsp.

REFERENCES: 1. Campbell, M. F.: Principles of Urology, Philadelphia, W. B. Saunders Co., 1957, p. 101. 2. Carroll, G.: Bacterial Infections of the Urinary Tract (Male), in Conn, F.: Current Therapy 1956, Philadelphia, W. B. Saunders Co., 1956, p. 301. 3. Jawetz, E.: A.M.A. Arch. Int. M. 100:549, 1957.

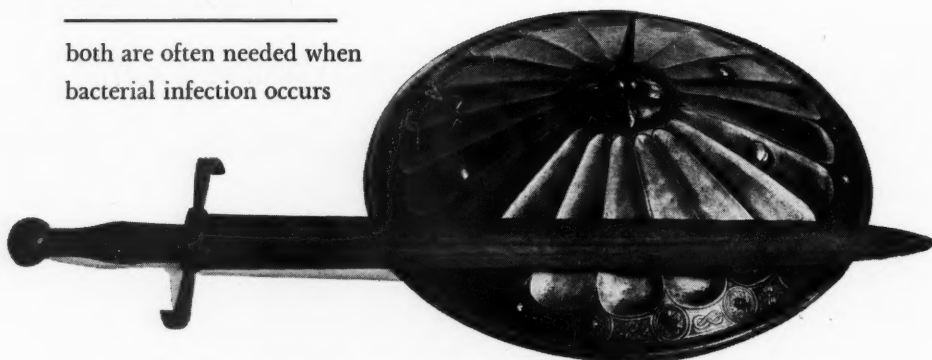
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- prompt, aggressive antibiotic action
- a reliable defense against monilial complications

both are often needed when bacterial infection occurs



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Mysteclin-V contains tetracycline phosphate complex

It provides a direct strike at all tetracycline-susceptible organisms (most pathogenic bacteria, certain rickettsias, certain large viruses, and *Endamoeba histolytica*).

It provides the new chemical form of the world's most widely prescribed broad spectrum antibiotic.

It provides unsurpassed initial blood levels — higher and faster than older forms of tetracycline — for the most rapid transport of the antibiotic to the site of infection.

for protection against monilial complications

Mysteclin-V contains Mycostatin

It provides the antifungal antibiotic, first tested and clinically confirmed by Squibb, with specific action against *Candida (Monilia) albicans*.

It acts to prevent the monilial overgrowth which frequently occurs whenever tetracycline or any other broad spectrum antibiotic is used.

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Squibb Tetracycline Phosphate Complex (Sumycin) and Nystatin (Mycostatin)

Capsules (250 mg./250,000 u.), bottles of 16 and 100. Half-strength Capsules (125 mg./125,000 u.), bottles of 16 and 100. Suspension (125 mg./125,000 u. per 5 cc.) 60 cc. bottles. Pediatric Drops (100 mg./100,000 u. per cc.) 10 cc. dropper bottles.

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Selective

Does not interfere with autonomic function

Does not impair mental efficiency,
motor control, or normal behavior

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FINNERTY, F. A., Buchholz, J. H. and Tuckman, J.: J.A.M.A. 166:141,
Jan. 11, 1958.

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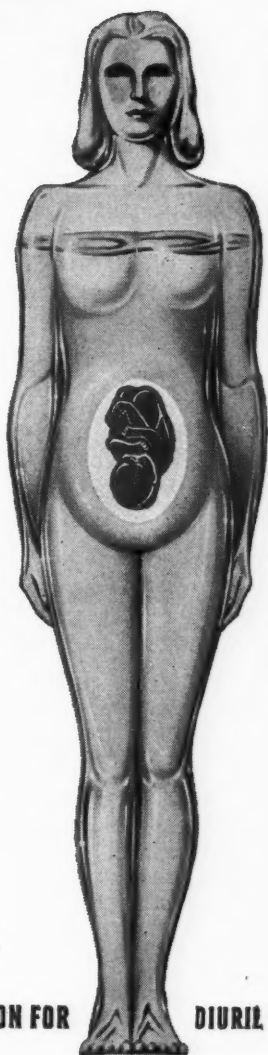
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pregnancy

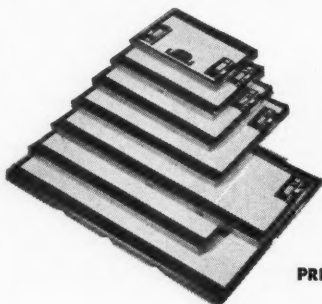
....caused an excellent diuresis, with reduction of edema, weight, blood pressure, and albuminuria....”



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	7x17—\$23.50	10x12—\$20.00	14x17—\$25.25



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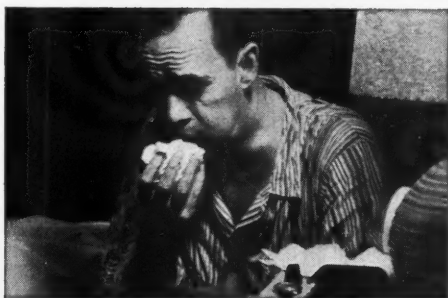
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Pyribenzamine® EXPECTORANT breaks up cough

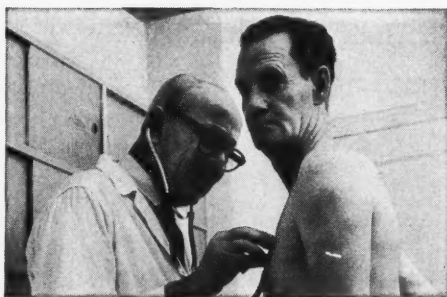
even persistent cough



Patient, factory worker, age 43, had suffered for months with persistent, dry cough, which he termed "smoker's hack."



Cough frequently interrupted his sleep, causing him to be nervous, irritable; his job efficiency was impaired.



Chest X-ray was negative and the plant physician prescribed PYRIBENZAMINE EXPECTORANT with Ephedrine. Patient noticed almost immediate relief—a week later felt "considerably better."

Pyribenzamine Expectorant with Ephedrine provides a unique combination of antitussive agents, which work three ways at once to break up the persistent cough: *Pyribenzamine* relieves histamine-induced congestion throughout the respiratory tract; *ephedrine* relaxes the bronchioles and makes breathing easier; *ammonium chloride* liquefies mucus, relieving dry cough and promoting productive expectoration.

Supplied: Pyribenzamine Expectorant with Ephedrine, containing 30 mg. Pyribenzamine citrate (equivalent to 20 mg. Pyribenzamine hydrochloride), 10 mg. ephedrine sulfate and 80 mg. ammonium chloride per 4-ml. teaspoon.

Also available: Pyribenzamine Expectorant with Codeine and Ephedrine, same formula as above with the addition of 8 mg. codeine phosphate per 4-ml. teaspoon (exempt narcotic).

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C I B A
SUMMIT, N. J.

Of course,



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Therapy for the menopause syndrome should relieve not only the psychic instability attendant the condition, but the vasomotor instability of estrogen decline as well. Though they would have a hard time explaining it in such medical terms, this is the reason women like "Premarin."

Doctors, too, like "Premarin," because it really relieves the symptoms of the menopause. It doesn't just mask them — it replaces what the patient lacks — natural estrogen.

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*Clinically confirmed
in over 2,500
documented
case histories^{1,2}*

CONFIRMED EFFICACY

- Deprol* ▶ acts promptly to control depression
without stimulation
- ▶ restores natural sleep
 - ▶ reduces depressive rumination and crying

DOCUMENTED SAFETY

Deprol is unlike amine-oxidase inhibitors

- ▶ does not adversely affect blood pressure or sexual function
- ▶ causes no excessive elation
- ▶ produces no liver toxicity
- ▶ does not interfere with other drug therapies

Deprol is unlike central nervous stimulants

- ▶ does not cause insomnia
- ▶ produces no amphetamine-like jitteriness
- ▶ does not depress appetite
- ▶ has no depression-producing aftereffects
- ▶ can be used freely in hypertension and in unstable personalities

Dosage: Usual starting dose is 1 tablet q.i.d. When necessary, this dose may be gradually increased up to 3 tablets q.i.d.

Composition: Each tablet contains 400 mg. meprobamate and 1 mg. 2-diethylaminoethyl benzilate hydrochloride (benactyzine HCl).

Supplied: Bottles of 50 scored tablets.

1. Alexander, L.: Chemotherapy of depression—Use of meprobamate combined with benactyzine (2-diethylaminoethyl benzilate) hydrochloride. J.A.M.A. 166:1019, March 1, 1958. 2. Current personal communications; in the files of Wallace Laboratories.

†TRADE-MARK
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GLUCOSAMINE-POTENTIATED TETRACYCLINE

CAPSULES

(black and white)
250 mg., 125 mg.
(for pediatric or long-term therapy)

ORAL SUSPENSION

(orange-flavored)
125 mg. per tsp. (5 cc.)
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glucosamine-potentiated tetracycline with nystatin

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bottle

COSA-TETRACYDIN*

glucosamine-potentiated tetracycline-analgesic-
antihistamine compound

For relief of symptoms and malaise of the
common cold and prevention of secondary
complications

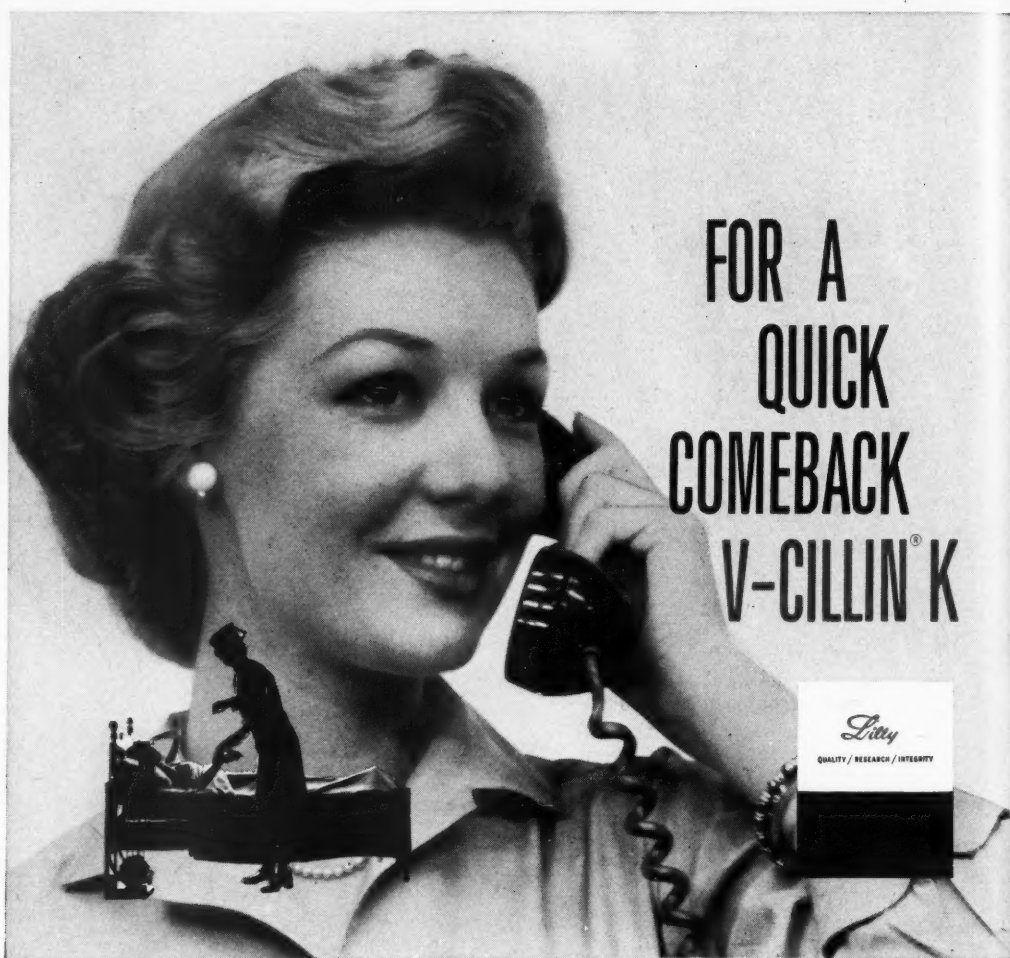
CAPSULES (black and orange)—each capsule contains: Cosa-Tetracycline 125 mg.; phenacetin 120 mg.; caffeine 30 mg.; salicylamide 150 mg.; buclizine HCl 15 mg.

REFERENCES: 1. Carlozzi, M.: Antibiotic Med. & Clin. Therapy 5:146 (Feb.) 1958. 2. Welch, H.; Wright, W. W., and Staffa, A. W.: Antibiotic Med. & Clin. Therapy 5:52 (Jan.) 1958. 3. Marlow, A. A., and Bartlett, G. R.: Glucosamine and leukemia, Proc. Soc. Exp. Biol. & Med. 84:41, 1953. 4. Shalowitz, M.: Clin. Rev. 1:25 (April) 1958. 5. Nathan, L. A.: Arch. Pediat. 75:251 (June) 1958. 6. Cornbleet, T.; Chesrow, E., and Barsky, S.: Antibiotic Med. & Clin. Therapy 5:328 (May) 1958. 7. Stone, M. L.; Sedlis, A., Bamford, J., and Bradley, W.: Antibiotic Med. & Clin. Therapy 5:322 (May) 1958. 8. Harris, H.: Clin. Rev. 1:15 (July) 1958.

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dependable action

because all patients show therapeutic blood concentrations of penicillin with recommended dosages.

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of the bacteria-destroying antibiotic. Within five to fifteen minutes after administration, therapeutic concentrations appear in the general circulation.

higher blood levels

than with any other penicillin given

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Supplied: Tablets, scored, of 125 and 250 mg. (200,000 and 400,000 units).

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(brand of lidocaine*)

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For Real Pain ...give real relief:

A.P.C.^{WITH} Demerol[®]

tablets

Each tablet contains:

Aspirin	200 mg. (3 grains)
Phenacetin	150 mg. (2½ grains)
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Average Dose:

1 or 2 tablets.

Narcotic blank required.

Potentiated Pain Relief

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Gastroenterology
 Malcom E. Phelps, M.D., El Reno, Okla.
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 Keith P. Russell, M.D., Los Angeles, Calif.
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Internal Medicine
 Howard P. Rome, M.D., Rochester, Minn.
Neuropsychiatry
 R. Gordon Douglas, M.D., New York, N. Y.
Obstetrics

Maynard C. Wheeler, M.D., New York, N. Y.
Ophthalmology
 Lenox D. Baker, M.D., Durham, N. C.
Orthopedic Surgery
 Ben H. Senturia, M.D., St. Louis, Mo.
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 Francis Bayless, M.D., Cleveland, Ohio
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